ENVIRONMENTAL ANALYSIS AND DECISION ON THE NEED FOR AN ENVIRONMENTAL IMPACT STATEMENT (EIS)
(DNR)
Form 1600-1 Rev. 6-2001

Department of Natural Resources

Region or Bureau
DNR Southeast Region
Type List Designation
II

NOTE TO REVIEWERS: This document is a DNR environmental analysis that evaluates probable environmental effects and decides on the need for an EIS. The attached analysis includes a description of the proposal and the affected environment. The DNR has reviewed the attachments and, upon certification, accepts responsibility for their scope and content to fulfill requirements in s. NR 150.22, Wis. Adm. Code. Your comments should address completeness, accuracy or the EIS decision. For your comments to be considered, they must be received by the contact person before 4:30 p.m., Friday, November 22, 2002.

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Applicant: Wisconsin Electric Power Company; Wisconsin Energy Corporation; and W.E. Power, LLC

Address: 231 W. Michigan St., Milwaukee, WI 53203

Title of Proposal: Application for a Certificate of Public Convenience and Necessity for Construction of Two Large Electric Generation Facilities, the Port Washington Generating Station, and Associated High Voltage Transmission and Natural Gas Interconnection Facilities to be Located in Ozaukee County

Location: County: Washington - Ozaukee City/Town/Village: Jackson - Port Washington

Port Washington Generating Station

Environmental Assessment

October 2002

Docket Numbers:	**05-CE-117, 137-CE-104. 6650-CG-211**
Applicant:	Wisconsin Electric Power Company; Wisconsin Energy Corporation; W.E. Power, LLC; Wisconsin Gas Company; and American Transmission Company
Proposal:	Application for a Certificate of Public Convenience and Necessity for Construction of Two Large Electric Generation Facilities, the Port Washington Generating Station, and Associated High Voltage Transmission and Natural Gas Interconnection Facilities to be Located in Ozaukee County

I. Introduction

W.E. Power LLC (W.E. Power) proposes to develop a 1,090-megawatt (MW) intermediate load, gas-fueled, combined-cycle, electric generating facility consisting of two 545-MW units at the existing 320 MW Port Washington coal-fueled power plant in the city of Port Washington, Wisconsin. The site is located on the Lake Michigan shoreline, just south of the harbor. The existing coal-fired generators and all coal-related facilities on site would be retired and removed. The generating facility would be owned by W.E. Power, a non-utility affiliate of Wisconsin Energy Corporation (WEC). Wisconsin Electric Power Company (WEPCO) would operate the facility. The Port Washington Generating Station (PWGS) is one component of Wisconsin Electric Power Company's Power the Future (PTF) proposal. Another 1,530 MW of coal-fired generation proposed at the existing Oak Creek Power Plant is the other component of the proposal.

W.E. Power would finance, construct, and own the Port Washington generating facility. WEPCO would operate the Port Washington facility under a long-term lease arrangement. As operator of the plant and owner of the plant's output, it is anticipated that WEPCO would be involved in the plant's design, construction, and startup testing. This would help ensure that the plant meets WEPCO's expectations for reliable generation, efficient operations, achievement of schedule and cost targets, and would facilitate the transfer of control to WEPCO as the units are placed in service for commercial operation.

Under several federal and state definitions, a change in plant facilities and fuel source may be considered a repowering if the new generating facility is capable of controlling multiple combustion emissions simultaneously, operates at an improved level of efficiency, or reuses existing site infrastructure at an existing plant site. Because the proposed power plant would have lower emissions (per megawatt generated), be more efficient, and reuse some of the existing site infrastructure, the applicant has filed for the proposed replacement of the existing

Port Washington coal-fired units with natural gas-fired combined cycle units as a repowering project.

W.E. Power has proposed two alternative layouts for the proposed power plant at the Port Washington site. One layout has the long dimension of the plant parallel to the lake shore and places the new power plant mostly within the bounds of the existing power plant building. The other layout has the plant perpendicular to the shore and parallel to the bluff to the south.

The proposed natural gas supply would be provided by a new 24-inch and 20-inch, 16.5-mile lateral connection to an existing ANR Pipeline Company (ANR) pipeline. This pipeline, to be built by Wisconsin Gas Company (WG), would be installed to serve both the PWGS and the Wisconsin Electric-Wisconsin Gas distribution system.

The American Transmission Company (ATC) proposes to rebuild three 138-kV electric transmission lines and make related substation improvements to provide electric transmission service for the new PWGS. Two of the lines are approximately 5 miles long and connect the Port Washington Substation to the Saukville Substation. The third line extends approximately 21 miles from PWGS to Milwaukee.

II. Potential Permits and Approvals Required

Table 1 Potential permits and approvals required

Agency	Activity	Type of Permits and Approval	Associated with (Power Plant, Gas Lateral, or Transmission line)
Federal Agencies			
US Army Corps of Engineers	Construction in wetlands/ stream crossings	Dredge and fill permits	Gas lateral and transmission line
Federal Aviation Administration	Notice of proposed construction or alteration	FAA clearance	Power plant
State Agencies			
Wisconsin Public Service Commission	Building and operating generating units	Certificate of Public Convenience & Necessity (CPCN - Wis. Stat. §196.491 and Wis. Admin. Code ch. PSC 111)	Power plant
	Construction of gas lateral	Certificate of Authority (CA - Wis. Stat. ch. 196.49 and Wis. Admin. Code ch. PSC 112)	Gas lateral
	Upgrade of transmission facilities	Certificate of Authority (CA - Wis. Stat. §196.49 and Wis. Admin. Code ch. PSC 112)	Transmission line

Agency	Activity	Type of Permits and Approval	Associated with (Power Plant, Gas Lateral, or Transmission line)
Department of Natural Resources	Air pollutant emissions	Construction and operating permits (Wis. Stat. §285.60, Wis. Admin. Code chs. NR 405 to 408, and 40 CFR Part 52.21) and acid rain permit (Wis. Admin. Code ch. NR 409 and 40 CFR Part 75)	Power plant
	Wastewater discharge	Water pollution discharge elimination system permit (Wis. Stat. ch. 283)	Power plant
	Grading on an unbroken slope	Wis. Stat. ch. 30 permit	Power plant and transmission line
	Pond within 500 feet of a navigable water	Wis. Stat. ch. 30 permit	Power plant
	Stormwater management during construction and operation	Stormwater discharge permit (Wis. Admin. Code ch. NR 216)	Gas lateral and transmission line
	Trench dewatering	Wis. Admin. Code ch. 283 permit	Gas lateral
	Hydrostatic pressure test	Wis. Admin. Code ch. 283 permit	Gas lateral
	Stormwater discharge	Notice of intent for WPDES permit coverage (Wis. Stat. Ch. 283)	Power plant
	Stream and wetland crossing	Wis. Stat. ch. 30 permit (Wis. Admin. Code chs. NR 102, 103, 115, 116, 117, and 299 and 2001 Wis. Act 6)	Gas lateral
	Structures on Lake Michigan Bed Permit	Wis. Stat. ch. 30 permit (Wis. Admin. Code chs. NR 102, 103, 115, 116, 117, and 299 and 2001 Wis. Act 6)	Power plant
	Grading in excess of 10,000 square feet on the banks of navigable waterways	Wis. Stat. ch. 30 permit	Power plant and gas lateral
	Structure below ordinary high water mark	Wis. Stat. ch. 30 permit	Power plant
	Wetland impacts and floodplain modifications	Oversight of city and county ordinances	Power plant and gas lateral
	Threatened and endangered species review	Endangered resource impact review (Wis. Stat. §29.604 and Wis. Admin. Code ch. NR 27)	Power plant, transmission line, and gas lateral

Agency	Activity	Type of Permits and Approval	Associated with (Power Plant, Gas Lateral, or Transmission line)
Department of Agriculture, Trade, and Consumer Protection	Agricultural impact notification and response	Response letter	Transmission line and gas lateral
Department of Transportation	Road crossing	Design approval	Transmission line and gas lateral
	Construction of utility in ROW	Utility permit	Transmission line and gas lateral
	Stack and transmission tower/line height	Design approval	Power plant and transmission line
	Construction along state roads	Utility Permit DT 1553	Transmission line and gas lateral
	Oversize loads on highways	Vehicle weight restrictions	Power plant
Department of Commerce	Installation of combustion turbines and related equipment	Approval of safety mechanisms and plans (Wis. Stat. § 101.17)	Power plant
	Construction of all buildings and structures	Approval of plans and specifications (Wis. Stat. § 101.02)	Power plant
	Installation of dust filtering and HVAC equipment	Approval of plans and specifications (Wis. Stat. § 101.12)	Power plant
	Installation of fuel or lubricating oil storage tanks	Design approval	Power plant
Department of Health and Social Services	Construction of plumbing facilities	Approval of plans and specifications	Power plant
State Historical Society of Wisconsin	Site preparation and grading	Approval of archaeological surveys (Wis. Stat. § 44.40 and Section 106 of National Historic Preservation Act)	Power plant, gas lateral, transmission line
County Agencies			
Ozaukee County Highway Department	Any change to county highways	Access permit	Power plant
	Utilities in the ROW	Utility permit	Transmission line and gas lateral
Ozaukee County Department of Environmental Health	Utility construction	Zoning permit	Transmission line and gas lateral
	Construction or trenching within 300 feet of water resources, wetlands, flood plains	Special exception permit	Transmission line and gas lateral
	Location and plans of utilities outside incorporated limits	Administrative approval	Transmission line and gas lateral
Ozaukee County Emergency Management Department	Inventory of hazardous materials and toxic release, to be filed 60 days prior to	Emergency response commission notification, Tier 11 Form	Power plant

Agency	Activity	Type of Permits and Approval	Associated with (Power Plant, Gas Lateral, or Transmission line)
	reportable chemicals being present on site.		
Washington County	Construction in ROW	ROW permit	Gas lateral
Milwaukee County	Construction in ROW of county roadways	ROW permit	Transmission line
	Construction across streams or parkland	Easement would require approval of Parks Committee, County Board and County Executive	Transmission line
	Construction across county lands	Easement would require approval of Oversight Committee, County Board and County Executive	Transmission line
City and Towns			
Town of Cedarburg	Utility construction in ROW of township roads	Construction permit (based on approval of construction plans)	Gas lateral
	Construction plan approval	Township board approval	Gas lateral
City of Port Washington	Work on utilities	Utility permit	Transmission line and gas lateral
	Installation of new lines	Conditional use permit	Transmission line and gas lateral
	Work within ROW	Road ROW permit	Transmission line and gas lateral
	Size and type of structure and activities	Zoning permit	Transmission line
	Construction of plant	Building permit	Power plant
	Plant operations	Occupancy permit	Power plant
	Construction of plant	Conditional use grant (based on approval of construction plans)	Power plant
Village of Saukville	Construction in ROW or across roadways	Street use permit	Transmission line and gas lateral
Town of Grafton	Construction of pipeline or Transmission line	Road bond for work in ROW	Transmission line and gas lateral
Village of Grafton	Construction in ROW or across roadways	Street use permit	Transmission line
City of Mequon	Construction in ROW or public lands	ROW permit	Transmission line
	Construction of large utility structures	Planning Commission approval	Transmission line
Village of Thiensville	Construction in ROW	ROW permit	Transmission line
Village of Brown Deer	Construction in ROW	ROW permit	Transmission line

Agency	Activity	Type of Permits and Approval	Associated with (Power Plant, Gas Lateral, or Transmission line)
	Construction plan approval	Community development approval	Transmission line

Agency	Activity	Type of Permits and Approval	Associated with (Power Plant, Gas Lateral, or Transmission line)
City of Glendale	Power line construction	Electric permit	Transmission line
	Large structures	Building Permit	Transmission line
	Installation within ROW	ROW permit	Transmission line
	Design and planning of transmission line	Planning Commission approval	Transmission line
Town of Jackson	Construction in ROW or across roadways	Road crossing permit	Gas lateral

III. Purpose and Need

WEPCO reports that the peak demand experienced on its utility systems (6,298 MW) occurred during the summer of 2001. WEPCO projects that demand for electricity supplied by it will grow at a 2.5 percent annual rate from 2002 through 2011. This is consistent with the projections made by Commission staff in the 2002 Strategic Energy Assessment. In addition, WEPCO states that firm sales to non-native wholesale customers are expected to increase by 286 MW during this period. Based on these projections, the growth in WEPCO's total demand obligation (including reserves) is projected to be 2,032 MW through 2011. Without capacity additions, WEPCO estimates the difference between projected demand (including 18 percent reserves) and net generation plus purchases would grow to a deficit of 2,479 MW in 2011.

In order to satisfy this need, WEPCO believes it must arrange for this capacity plus an 18 percent reserve margin, to ensure that it can reliably meet its customers' requirements. In looking at alternatives for meeting this increased demand, WEPCO states that it included a forecast of the portions of this demand that might be satisfied by continued energy efficiency measures, demand-side management activities (which shift peak demand to off-peak hours) and by use of renewable energy sources for the generation of electricity. Even after taking into account these measures, WEPCO believes it is evident that a substantial increase in electric generation resources will be required over the next decade to reliably meet the demand of its customers.

IV. Estimated Cost

W.E. Power proposes to construct two 545 MW combined cycle units at the Port Washington site. The first unit would begin commercial operation in 2005 and the second unit in 2008. The project has the following specified costs:

Port Washington Combined Cycle Project
Capital Cost Estimates

Item	First Unit Cost	Second Unit Cost	Total Cost
Generation Facility	$309,600,000	$280,300,000	$589,900,000

The above estimates are in 2001 dollar terms, meaning the actual values would be higher depending on the amount of inflation that occurs. The capital costs cover the major power block equipment, plant mechanical and electrical equipment and materials, structures, site work, construction labor and management, design and engineering, and project development. The costs shown above do not include any commercial operational costs for the units such as fuel or variable and fixed operations and maintenance, nor do they include the capital carrying costs associated with financing the project.

WE Power would be selling the power and energy from the Port Washington facilities to WE Energies via a 20-year leasing arrangement. WE Energies represents the regulated electric public utility. WE Power would use the above cost estimates when determining the appropriate lease payments that WE Energies' ratepayers would pay. As of its June 14, 2002 filing, WE Power proposes to determine the lease payments using a 13.9 percent return on common equity and an approximately 6.7 percent interest rate on debt. The proposed capitalization behind the lease would constitute 58 percent common equity and 42 percent debt. These values translate into a weighted cost of capital of 10.9 percent. This value does not include the effects of federal or state corporate income taxes. When accommodation is given to necessary tax effects, the overall economic cost of capital is 16.2 percent, essentially the effective interest rate associated with financing the facilities. Annual lease payments, using a 16.2 percent economic cost of capital and the $309,600,000 first unit project cost, would be $52,800,000.

On July 19, 2002, WEPCO as part of an agreement with the Customers First Coalition indicated that WEPCO would accept new financing assumptions in the lease. These new lease assumptions include using a capital structure with 55 percent common equity earning a 12.9 percent return. At these new values the economic cost of capital would drop from 16.2 percent to 14.9 percent, and the annual lease payment would be $49,200,000.

V. Project Description

This combined-cycle power plant project would consist of two 545-MW generating units that would use both gas and steam cycles to generate electricity. Each 545-MW unit would include two natural gas-fired combustion turbine-generators operating in conjunction with two heat-recovery steam generators (HRSG) and a steam-turbine generator (STG). Each combustion turbine (CT) would have a generator net power output of 165 MW. The STG would have a power output of about 215 MW.

A CT typically has three major components: a compressor, a combustion chamber, and a turbine. Air is drawn into the compressor, compressed, and discharged to the combustion

chamber. The compressed air is mixed with the fuel and burned in the combustion chamber and sent to the turbine where the hot gas expands across the turbine blades, causing them to rotate.

In a combined-cycle facility, the hot air exiting the CT is routed to a HRSG, where the waste heat of the CT is utilized for the steam cycle. The gas cycle generally operates at temperatures in the range of 2,000 to 3,000 degrees Fahrenheit, while the steam cycle generally operates at temperatures in the range of 1,000 to 1,100 degrees Fahrenheit. The HRSG supplies steam to the STG for additional generation of power. The steam exits the STG and proceeds to the condenser so that condensed water can be pumped back to the HRSG. The combined-cycle process increases efficiency by 15 to 20 percent.

The combined-cycle plant would be equipped with air pollution control equipment to minimize emissions of nitrogen oxide (NO_x), carbon monoxide (CO), and volatile organic compounds (VOC). The CTs would be equipped with dry, low NO_x combustors. Each CT would include an air inlet system with specially-designed equipment and ducting to modify air quality under various temperature, humidity, and contamination situations. Each HRSG would be equipped with both selective catalytic reduction (SCR) for reduction of NO_x emissions, and an oxidation catalyst for reduction of CO and VOC emissions.

The existing Port Washington power plant consists of four coal-fired units, with a total output of 320 MW. A fifth 80 MW unit has been decommissioned. The first proposed 545-MW generating unit would be built in place of existing generating units 4 and 5. This first unit would be operational by May 2005. WEPCO plans to retire unit 4 in the fall of 2002. The second 545-MW unit would be built in place of existing units 1, 2, and 3. This second unit would be operational by May 2008. WEPCO plans to retire units 1, 2, and 3 in the fall of 2004. The existing building, housing all five units, would be extended south of unit 5 to provide additional room for the new plant. Each of the four HRSGs would be located in line with its associated CT and would connect to a steel stack 210 feet tall. The plant's existing stacks would be demolished. The company's proposed and alternate plant lay-outs at the Port Washington site are illustrated in Figure 1 and Figure 2, respectively.

Figure 1 Proposed plant lay-out

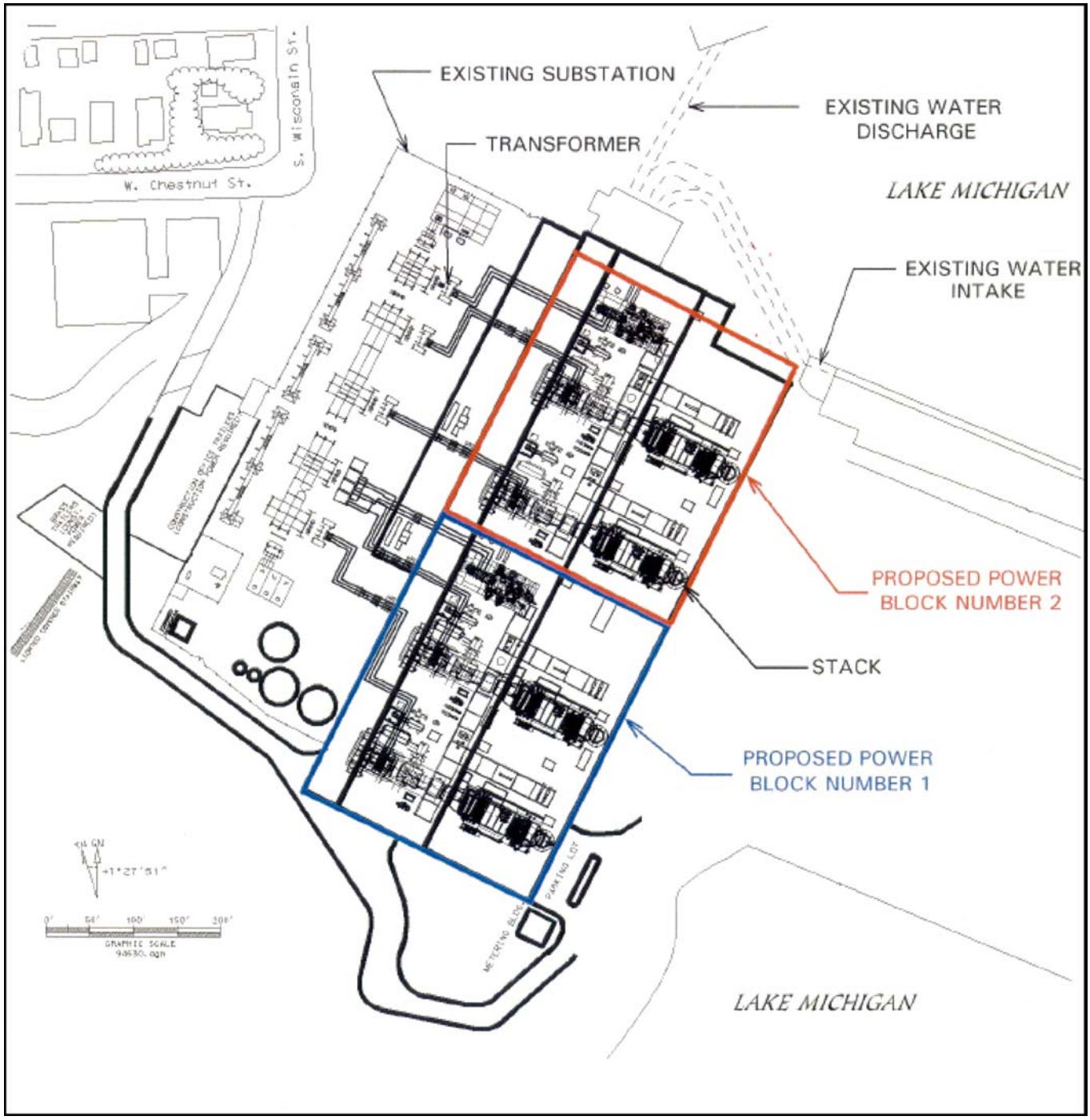
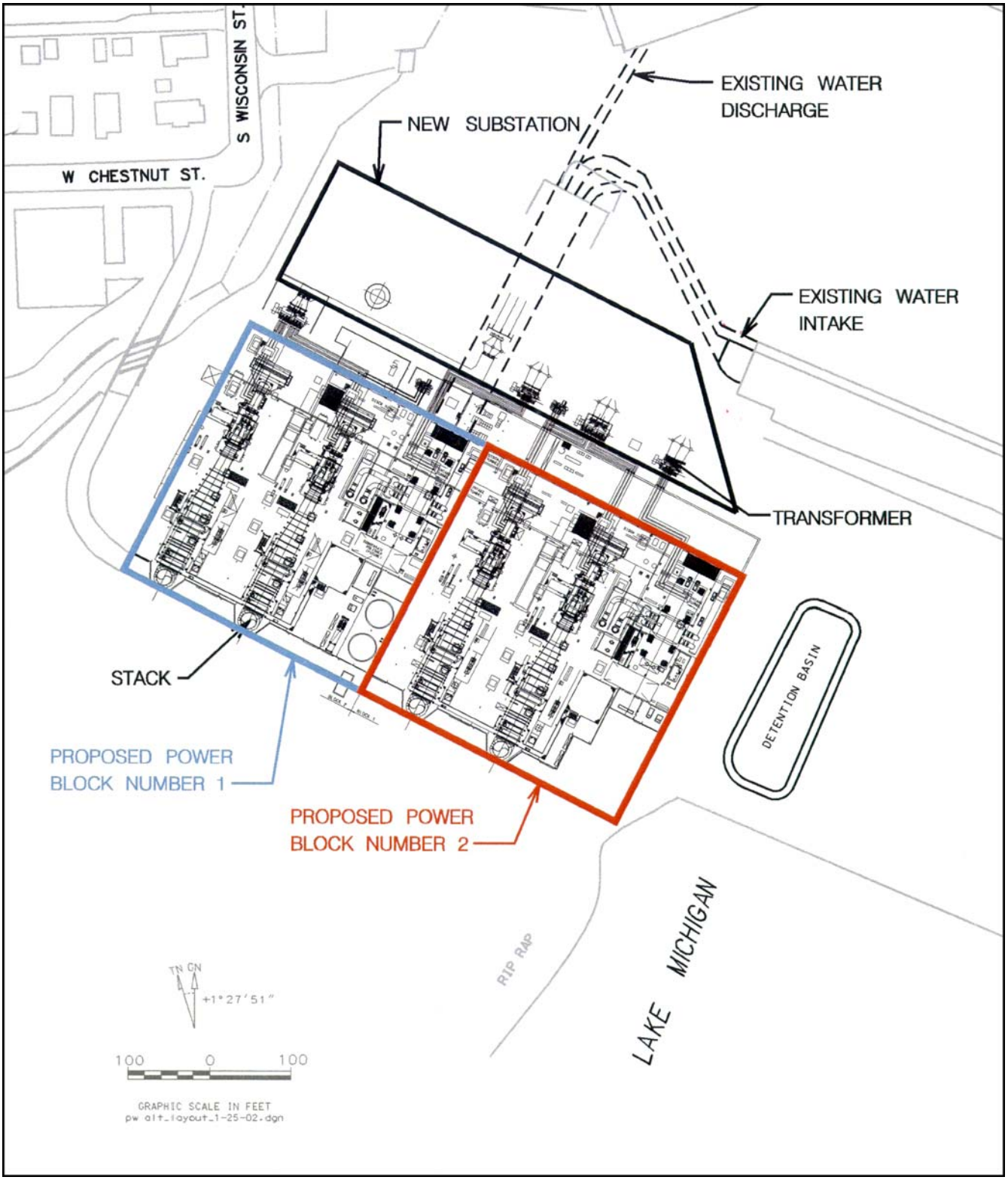


Figure 2 Alternative plant lay-out



The maximum total water withdrawal rate from the lake for cooling the proposed facility is estimated to be about 560,000 gallons per minute (gpm). Of this, approximately 535,000 gpm of lake water would be passed through the condensers and other heat exchange equipment. Another 25,000 gpm would be used to improve the CT operating efficiency during warmer weather by cooling the inlet air over coils containing once-through circulating lake water.

Port Washington's existing water intake structure was designed with a capacity of 565,000 gpm, which should be adequate for the proposed new plant configuration. The existing cooling water intake system contains bar racks, traveling water screens, ten 55,000 gpm circulating water pumps for condenser cooling, and eleven service water pumps with a combined capacity of about 15,000 gpm. W.E. Power notes that during the period 1996 through 1998, the average and maximum flow rates through the cooling system were 293,000 gpm and 440,000 gpm, respectively.

Two new 150,000-gallon demineralized water storage tanks would be constructed to store water for use as steam-cycle makeup. The existing demineralizer plant, consisting of two trains each with a capacity of 150 gpm, would be used to produce demineralized water for the new facility. The existing municipal water supply source would be used for potable uses, back-up fire protection, and for providing makeup to the demineralizer system.

Wastewater generated from the proposed plant would include discharges from the demineralizer system, blowdown from the HRSG, some storm water runoff, and runoff from the turbine hall floor drains. The power plant's current wastewater treatment system, which includes a tertiary settling pond, two coal pile runoff basins, and two ash dewatering basins, would be abandoned. The new wastewater treatment equipment would incorporate a wastewater neutralization tank that treats the demineralizer effluent. An oil/water separator would be installed to collect water from floor drains. Both discharge streams from the neutralization tank and oil/water separator would discharge to the existing circulating water discharge tunnel.

W.E. Power proposes to operate the combined-cycle generating facility in intermediate load mode, though the company is seeking permits to operate the facility as a base-load power plant. The company projects an average annual capacity factor of 35 percent for the proposed facility. Intermediate plants are generally used for cyclic operation. They are normally operated only during times of elevated load demand and therefore have a lower capacity factor than base load plants, typically in the 25 to 50 percent range. Base load plants provide a base level of electricity to the system, and tend to operate continuously except when down for scheduled maintenance or an unplanned (forced) outage. Table 2 contains the expected hours of operation and the output of the proposed PWGS.

Table 2 Expected plant operation and output

	Hours of Operation	Output (MW)[1]
Daily	16	1,090
Weekly	80 (5 days per week)	1,090
Seasonally[2]	(25 to 40% capacity factor)	1,090
Annually	(25 to 40% capacity factor)	1,090

[1]The planned output for the units can be expected to range from 75 to 100 percent.
[2] No seasonal variation is modeled for this intermediate load facility.

WG is proposing to construct a high-pressure natural gas main to serve the PWGS and provide support to the existing WG Port Washington gas lateral. The project is approximately 16.5 miles long and is divided into two pipe sizes. The first pipeline segment would be 24 inches in diameter and would begin at a new gate facility to be constructed adjacent to the present WG Hartford Gate facility in the town of Jackson, Washington County. This segment would proceed east for approximately 14 miles, terminating at the proposed new WG regulation facility on the existing WG Port Washington gas lateral, midway between I-43 and CTH LL. The second pipeline segment, 20 inches in diameter, would proceed east 2.5 miles from the new regulation facility to a new regulation facility to be built on the PWGS site. The pipeline is scheduled to be operational in November 2004.

ATC is proposing two phases of improvements to the electrical transmission system in order to accommodate the proposed PWGS. Phase 1 would consist of the rebuilding of three transmission lines and the upgrading of three associated substations (Port Washington, Saukville, and Range Line). The existing 4.8-mile, double-circuit 138 kV Port Washington-Saukville overhead transmission line and the existing 4.7-mile, single-circuit 138 kV Port Washington-Saukville overhead transmission line would be rebuilt in Ozaukee County.
The existing 21.2-mile, double-circuit 138 kV Port Washington-Range Line overhead transmission line would be rebuilt between Port Washington and Milwaukee. Phase 1 transmission improvements would be finished by the time the first unit of the PWGS is operational in 2005. Phase 2 improvements would consist of replacing the existing underground 138 kV Sidney Terminal-Cornell transmission line and making the necessary line terminations at Sidney Terminal and Cornell Substation. The two-mile line is located in the cities of Glendale and Milwaukee. Phase 2 transmission improvements would be finished by the time the second unit of the PWGS is operational in 2008.

VI. Alternatives Analysis

No Build

If the PWGS is not approved as proposed by W.E. Power in its application, WEPCO has stated that it would still proceed with the retirement of the existing plant. Any shortfall in power generated by WEPCO would be addressed through power purchases on the open market and/or load reduction—conservation measures. Limitations in the electric transmission system of southeastern Wisconsin could make it difficult to import power to the region served by the plant

at times when the transmission system is heavily loaded. Power could possibly be purchased from previously authorized merchant power plants, such as the 1,000 MW BadgerGen plant at Pleasant Prairie or the 590 MW Mirant plant at Plover, if they are built and in operation when WEPCO needs more capacity.

Competitive Bid Proposals

WEPCO considered contracting for natural gas-fired capacity from independent power producers as an alternative to the PWGS. WEPCO's economic and qualitative evaluations indicate that WEPCO's proposal for 2,620 MW of leased generation, of which the PWGS is a component, offers better value for WEPCO's customers than this alternative. By WEPCO's calculations, the PWGS proposal is at least $190 million lower in cost than any of the comparable alternatives evaluated by WEPCO. The PWGS proposal also scored better in WEPCO's qualitative evaluation. WEPCO identified the four most recent, viable, mature (in terms of project development), and competitive independent power producer project proposals. All proposals were targeted to achieve commercial operation by 2005.

Energy Priority Alternatives

Wisconsin Statute § 1.12(4) establishes the following priorities in the meeting of state energy needs:

(4) Priorities. In meeting energy demands, the policy of the state is that, to the extent cost-effective and technically feasible, options be considered based on the following priorities, in the order listed:

(a) Energy conservation and efficiency.
(b) Noncombustible renewable energy resources.
(c) Combustible renewable energy resources.
(d) Nonrenewable combustible energy resources, in the order listed:
    1. Natural gas.
    2. Oil or coal with a sulfur content of less than 1 percent.
    3. All other carbon-based fuels.

The PWGS project must be evaluated in terms of these priorities. The proposed project would fall under (d) 1 of the priorities. A discussion of the energy efficiency and renewable energy alternatives to the project follows.

Energy Efficiency

In determining how best to meet its future needs, the applicant considered energy efficiency measures before the proposed generating station. WEPCO completed an energy efficiency analysis to estimate the potential energy efficiency savings available to meet WEPCO future needs. This analysis identified only about 10 MW of cost-effective energy efficiency savings, over the 2003-2015 time period, that are not already included in WEPCO forecast. The applicant concluded that the additional energy efficiency savings available are too small to effectively substitute for the proposed generating station.

The applicant's energy efficiency analysis has several shortcomings. First of all, the analysis was completed only for the residential sector. Large commercial and industrial (C&I) customers were not included in the analysis because, in docket 6630-UR-109, the Commission determined that it was no longer appropriate for WEPCO to provide rate-payer funded energy efficiency services to these customers. Small C&I customers were not included in the analysis because WEPCO assumed this customer segment has a small potential since small C&I sales are less than a third of residential sales. Another shortcoming of the analysis is that WEPCO is not able to identify the amount of energy efficiency savings included in its forecast. WEPCO assumes that all energy efficiency savings from market driven programs, about 150 MW between 2003 and 2015, and from public benefits programs, about 80 MW over the same time period, are included in the forecast. WEPCO states that because its past energy efficiency efforts are in the historical customer usage data used to develop the forecast for the proposed generating facility, it is reasonable to conclude the forecast includes similar impacts. WEPCO's analysis also does not include any load management or fuel switching measures.

PSC staff also conducted an energy efficiency analysis. Staff's analysis compares the energy efficiency potential identified in the Commission-approved Statewide Technical and Economic Potential (STEP) Study to the level of energy efficiency estimated to be included in the forecast for the proposed generating facility. This analysis identified 165 and 365 MW of cost-effective energy savings available by 2005 and 2008, respectively, that are not already included in WEPCO's forecast.

Commission staff's analysis also has several shortcomings. Because the level of energy efficiency included in WE Energies' forecast for the proposed generating facility cannot be identified, the level of energy efficiency included in WE Energies Advance Plan 8 (AP 8) forecast was used as the basis for the estimate of market driven and utility-induced energy efficiency impacts included in this forecast. The last update of the STEP analysis was completed in 1995, resulting in the analysis being outdated. Since the STEP analysis was completed, there have been improvements in energy efficiency technologies and the cost of power has increased. These changes, along with the recognized failure of the STEP Study to adequately address industrial energy efficiency potential, are likely to result in a conservative estimate of the availability of cost-effective energy efficiency savings.

Energy efficiency savings, above those already included in WE Energies' forecast, are available. However, these savings alone are not sufficient to substitute for the WE Energies proposed generating facility. WE Energies intends to spend about $20 million over the next ten years, in addition to on-going investments, to support customer-based energy efficiency activities.

Renewable Resources

A renewable resource is defined by Wisconsin state law as a resource that derives electricity from biomass, wind power, solar thermal, photovoltaic, tidal or wave action, or a fuel cell that uses a renewable fuel. Wis. Stat. § 1.12(3)(b) requires that to the extent that it is cost-effective and technically feasible, all new installed capacity for electric generation in the state be based on renewable energy resources.

Benefits of using renewable resources to generate electricity are:

- reduced environmental effects when compared to traditional fuels
- they are non-depletable
- plants are usually small and modular
- short lead times for planning and construction
- can be sited closer to loads
- fixed fuel costs over life of the project

WEPCO has stated that it will meet the requirements of the Wisconsin Renewable Portfolio Standard (RPS) which is 2.2 percent of its retail sales in 2011, approximately 728,101 MWh of renewably-generated electricity. The applicant further states that its "target" will be 5.0 percent its 2011 retail sales from renewable resources if the Power the Future (PTF) proposal is approved. This would be 1,654,775 MWh.

Alternative Sites

Because WEPCO considers the project to be a repowering, it did not propose any alternative site away from the existing Port Washington Power Plant site. Any other site located in Port Washington or Ozaukee County would be off of the lakeshore at an inland site. WEPCO states that such a site would necessitate the use of cooling towers, which would decrease plant efficiency and increase costs.

Placing the new gas-fired units on a different site would result in changing a current land use as well as unknown environmental impacts related to transmission system interconnections, natural gas supply, and water use and discharge. WEPCO has stated that regardless of the PWGS proposal, the existing coal units at the Port Washington site would be retired in the near future due to age and condition. It seems reasonable to re-use the Port Washington site, if possible, due to the existing infrastructure and current land use designation.

VII. Environmental Analysis of the Power Plant Facility

Site Description

The applicant is proposing to build the PWGS on the site of the existing Port Washington Power Plant. Existing facilities on the site include the power plant building, the Port Washington Substation, a parking lot, a coal dock, coal handling equipment, and a dock holding wastewater treatment facilities. A tributary to Sauk Creek flows through the western edge of the site, adjacent to the Port Washington Substation. South of the power plant is a 50- to 100- foot high bluff top area. The northern third of this bluff top area is grassy and shrubby with a few groupings of trees. The southern two thirds are cropland planted in hay and corn with several tree lines.

Plant construction would not require additional land acquisition. The proposed site is and has been a power plant site since 1935. In 1929, the Milwaukee Electric Railway and Light Company purchased a large tract of Port Washington harbor land. Construction of the existing

coal-fueled power plant began in 1930, and the last (5^{th}) unit was placed in operation in 1950. The plant site was on a bluff on the Lake Michigan shoreline, requiring the leveling of a 110-foot hill for construction of the plant. Two hundred seventy-five thousand cubic yards of fill from the bluff were used to form the plant's 1,000 foot-long coal dock. Additional construction projects included adding dust collectors from 1949 to 1956, advanced precipitators to all units during the mid-1960s, and gas-burning combustion generators in 1969. Unit 5 is currently retired, and Unit 4 is scheduled for retirement in the fall of 2002. Present plans call for retirement of existing units 1, 2, and 3 in the fall of 2004. The site proposed for the new generating units and areas needed for construction staging and equipment laydown was previously used for these purposes during the construction of the existing power plant facilities. Subsequent to this use, these lands were graded and seeded. Reuse of these areas allows the plant to be located on and near areas supporting the existing power plant facilities and limits construction impacts to lands that were previously disturbed.

The new generating units would be constructed mostly within the existing plant operating area (44 acres, excluding 20 acres of dock area) and would occupy approximately 10 acres of the existing site. Additional acreage would be used for equipment lay-down, parking, and construction trailers during construction. This acreage (approximately 20 acres) is located on top of the bluff immediately south of the power plant site. All of this land is currently owned by WE. The plant site is now zoned industrial and the proposed laydown and parking areas are zoned as public and utility lands. Adjacent property is zoned central business, local service center business, multiple family central city mixed, public and utility lands, and multiple family (garden apartments and townhouses). The project would not require any changes to the current zoning. A residential neighborhood is located west of the project site.

There are two proposed layouts for the new facilities on the existing plant site. The applicant's preferred site layout configures the CTs, HRSGs, and STGs partly within the bounds of the existing power plant building (See Figure 1). This configuration maximizes the reuse of the existing infrastructure, including the electrical substation and its tie into the transmission system, and the cooling water intake and discharge facilities. Aesthetically, it also allows part of the plant to continue to look much as it does today. The building housing the plant would be extended about 100 feet to the south and 50 feet to the east. The exterior red brick facade of the west and north walls would be maintained. The facility footprint would be about 300 feet by 800 feet, and the substation area would remain at roughly its current size of about 150 feet by 550 feet. The primary reasons the applicant prefers this layout are lower cost and ease of construction.

The alternative site layout would place the plant south of the existing facility, roughly perpendicular to Lake Michigan and parallel along the cut portion of the bluff (See Figure 2). This location would also enable the use of the existing cooling water intake and discharge facilities. However, the existing substation would require some rearrangement. It would also be necessary to retire all the units of the existing power plant before construction could begin.

Air Quality

Source description

W.E. Power proposes replacing the four existing coal-fueled boilers with four CTs, four HRSGs with duct burners, two steam turbine generators, a natural gas heater, and an emergency diesel generator. The existing auxiliary gas-fueled boiler would remain. The CTs, gas heater, and duct burners would be natural gas-fueled. The first combined-cycle unit (Phase 1) would be built in place of existing units 4 and 5. Unit 5 is currently retired. Unit 4 is scheduled to be retired in October 2002. The first 545-MW combined-cycle unit would be commercially operational by May 1, 2005.

The second combined-cycle unit (Phase 2) would be built in place of existing units 1, 2, and 3. Units 1, 2, and 3 are scheduled to be retired in October 2004. The second 545-MW combined-cycle unit is expected to be operational by May 1, 2008.

National Ambient Air Quality Standards

The federal Clean Air Act requires the EPA to establish National Ambient Air Quality Standards (NAAQS) for air pollutants that could adversely impact human health or welfare. NAAQS have been established for the following pollutants, collectively referred to as "criteria pollutants."

- Sulfur dioxide (SO2)
- Nitrogen oxides (NOx)
- Carbon monoxide (CO)
- Particulate matter less than 10 microns in diameter (PM10)
- Ozone—volatile organic compounds (VOCs) considered as part of it
- Lead

The EPA has delegated its Clean Air Act permitting and review authority to the DNR. The State of Wisconsin regulates air pollutant emissions under Wis. Admin. Code Chapters 400-499 and has adopted the EPA primary and secondary standards. EPA describes an area as "non-attainment" if the ambient air quality standard for one or more criteria pollutants is not met.

The area of the state that includes the Port Washington site is presently classified as severe non-attainment for ozone. The area is presently classified as attainment for all other criteria pollutants. Because of these designations and the proposed project's potential emissions (see discussion below), the proposed project is subject to Prevention of Significant Deterioration (PSD) Review for CO, VOC, and PM_{10}. Federal regulations require major sources to apply Best Available Control Technology (BACT) for control of PSD-applicable pollutants. The applicant would need to obtain offsets for VOC emissions at a rate of 1.3 to 1. These offsets can be obtained from the market.

Construction Impacts

Construction activities have the potential for short-term impacts on air quality in the immediate area around the site. Vehicle diesel fumes and dust from site preparation and construction activities could affect local air quality.

Construction vehicles would use diesel fuel in which the sulfur content is formulated to minimize sulfur dioxide (SO_2) emissions (0.05 percent sulfur by weight). These vehicular emissions are not expected to significantly affect ambient air quality. Fugitive dust would be minimized through water application to unpaved traffic areas on the site.

Operation Impacts

Estimated potential emissions during operation

Table 3 summarizes the potential annual emissions to the air expected from the proposed power plant in tons per year (tpy), once both phases are operational. Total facility annual emissions, are based on four CT/HRSG units, a gas heater, and an auxiliary boiler, all operating at 100 percent load for 8,760 hours per year (i.e., full load for 1 year), and the emergency shutdown diesel generator operating 500 hours per year. For the CT/HRSG units, the estimates assume a natural gas sulfur content of 0.5 grains/100 standard cubic feet of natural gas. The volatile organic compound (VOC) estimates for the units are assumed to be less than 10 percent of the unburned hydrocarbon emissions at base load.

Table 3 Estimated annual emissions of the project in tons per year

Pollutant	CT/HRSG	Duct Burners	Auxiliary Boiler	Emergency Shutdown Diesel Generator	Gas Heater	Total Facility
NOx	764.8	59.5	60.0	3.8	1.60	889.7
CO	867.3	41.8	34.0	4.7	2.04	949.8
SO_2	22.0	3.2	0.3	0.1	0.03	25.6
PM/PM_{10}	578.2	*	3.2	0.2	0.33	581.9
VOC	80.9	8.3	2.3	0.5	0.24	92.3
Formaldehyde	9.5	0.3	0.0	0.0	0.03	9.8
H_2SO_4	33.7	4.9	0.4	0.2	0.04	39.3
Ammonia	437.0	*	-	-	-	437.0

*Included in CT emissions

BACT analysis

The 1977 Clean Air Act established revised conditions for the approval of pre-construction permit applications under the PSD program. One of these requirements is that Best Available Control Technology (BACT) be installed for all regulated pollutants that would be emitted in significant amounts from new major sources or modifications.

A BACT analysis was prepared for CO, $PM_{10,}$ and VOCs. For NO_x there would be a net emissions decrease, so a NO_x BACT analysis is not required. The combined-cycle combustion turbines are subject to NR 428, Wis. Admin. Code that limits NO_x emissions to three parts per million (ppm). Table 4 compares the pollutants emitted and their respective PSD significance levels.

Pollution control equipment and operating practices would ensure that criteria pollutants meet applicable BACT or NR 428 Wis. Admin. Code limits.

Table 4 Net change in emissions and PSD significance levels

Pollutant	Net Emissions Change (tpy)	PSD Significance Level (tpy)
NO_x	-2,664	40
CO	810	100
PM/PM_{10}	533	15
SO_2	-14,689	40
VOC	73	25*
Lead	-0.005	0.6
Fluorides	-30.2	3.0
H_2SO_4	-28	7
Mercury	-56 (lbs/y	1

*New Source Review (NSR) Significance Level; tpy = tons per year

BACT for the combined-cycle combustion turbines

The BACT analysis assumes that the combined-cycle combustion turbines and duct burners would use 500 start up and shut-down cycles in a year, and that the start-up cycle would last about 190 minutes. NO_x emissions from the combined-cycle combustion turbines and duct burners would be controlled through the use of selective catalytic reduction (SCR). The emission rate would be less than 3 ppm, based on a 30-day rolling average.

An oxidizing catalyst would control the CO and VOC emissions. The emission rate for VOCs would be 1.2 ppm, based on a 24-hour average. The CO emission rate would be 3 ppm, based on a 24-hour rolling average at loads 60 percent and higher.

Natural gas is inherently a low-ash fuel, so control of PM/PM_{10} would be through good combustion practices. The PM/PM_{10} emission rate would be 33 lb/hour. The low sulfur content of natural gas and good combustion practices also would minimize SO_2 and sulfuric acid (H_2SO_4) emissions from the combined-cycle combustion turbines.

BACT for the gas heater

The natural gas heater would be used to condition the gas by driving off moisture before it is delivered to the CTs. BACT analysis assumes that the gas heater operates at full load, or 8,760 hours per year. The gas heater BACT for CO, PM/PM_{10}, and VOCs would be the use of natural gas and good combustion practices.

BACT for the emergency generator

The emergency shutdown diesel engine is assumed to operate 500 hours per year or less and would burn a low sulfur diesel fuel. Because the equipment would not operate more than 500 hours per year, good combustion practices are considered BACT.

BACT for the auxiliary boiler

The auxiliary boiler would be fueled by natural gas. BACT analysis assumes that the auxiliary boiler operates at full load, or 8,760 hours per year. The auxiliary boiler BACT for CO, PM/PM_{10}, and VOCs would be the use of natural gas and good combustion practices. The

emission rate would be 0.08 lb per mmBtu for CO, 0.0076 lb per mmBtu for PM/PM10, and 0.0055 lb per mmBtu for VOC.

The BACT analysis summary results for the combustion sources associated with this project are shown in Table 5.

Table 5 BACT analysis

	One Combined-Cycle Combustion Turbine		Gas Heater		Emergency Diesel Engine		Auxiliary Boiler	
Pollutant	**Control**	**Rate**	**Control**	**Rate**	**Control**	**Rate**	**Control**	**Rate**
CO	CO Catalyst	3 ppmvd @ 15% O_2	Good combustion practices, use of natural gas as fuel	0.5 lbs/hr	Operate less than 500 hours/year and meet USEPA Tier I emissions	18.85 lbs/hr	Good combustion practices, use of natural gas as fuel	0.08 lb/MMBtu
PM/PM_{10}	Good combustion practices, use of natural gas as fuel	33 lbs/hr	Good combustion practices, use of natural gas as fuel	0.08 lbs /hr	Operate less than 500 hours/year and meet USEPA Tier I emissions	0.89 lbs/hr	Good combustion practices, use of natural gas as fuel	0.0076 lb/MMBtu
VOC	Oxidizing catalyst	1.2 ppmvd @ 15% O_2	Good combustion practices, use of natural gas as fuel	0.06 lb /MMBtu	Operate less than 500 hours/year and meet USEPA Tier I emissions	2.15 lbs/hr	Good combustion practices, use of natural gas as fuel	0.0055 lb/MMBtu

Ambient air quality analysis

The PWGS project has the potential for short-term impacts on air quality in the site's immediate area. Local background concentrations of various pollutants are shown in Table 6 where there is an applicable averaging period for the National Ambient Air Quality Standards (NAAQS). The modeled impacts from the proposed facilities are shown in Table 7. Because there is a net decrease for nearly all emissions, only PM/PM_{10} was included for the PSD modeling. Based on the modeling, the proposed facilities would not cause or contribute to a PSD increment exceedance. Modeled impacts from all NAAQS sources are shown in Table 8. The proposed facilities, plus other nearby sources, are not predicted to exceed NAAQS limits for any criteria pollutant.

Table 6 Background concentration of SO2, NO2, PM/PM10 and CO

Time Period	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	PM/PM_{10} ($\mu g/m^3$)	CO($\mu g/m^3$)
1 hour	NA	NA	NA	3188.0
3 hours	137.1	NA	NA	NA
8 hours	NA	NA	NA	890.4
24 hours	35.2	NA	58.0	NA
Annual	7.9	13.6	27.0	NA

Note: $\mu g/m^3$ equals micrograms per cubic meter

Table 7 PSD modeling results ($\mu g/m^3$)

Pollutant	Averaging Period	Phase 1 Modeled Impact	Phases 1+2 Modeled Impact	PSD Increment
PM_{10}	24-hour	11.2	21.90	30
PM10	Annual	0.8	1.44	17
NO_X	Annual	6.2	9.26	25

Table 8 NAAQS modeling results (µg/m3)

Pollutant	Background Concentration	Phase 1 Addition*	Phase 1 Combined Impact	Phases 1+2 Addition	Final Combined Impact	NAAQS
TSP – 24 hr	76.0	19.9	95.9	28.9	104.9	150
PM_{10} – 24 hr	58.0	19.9	77.9	28.9	86.9	150
PM_{10}-Annual	27.0	1.2	28.2	1.9	28.9	50
NO_X-Annual	13.6	6.2	19.8	9.3	22.9	100
SO_2 – 3 hr	137.1	242.7	379.8	6.3	143.4	1300
SO_2 – 24 hr	35.2	71.0	106.2	1.7	36.9	365
SO_2 – Annual	7.9	3.3	11.2	0.2	8.1	80
CO – 1 hr	3188.0	590.2	3778.2	590.2	3778.2	40000
CO – 8 hr	890.4	249.8	1040.2	249.8	1040.2	10000
NH_3 –24 hr	-	151.7	151.7	261.7	261.7	432
NH_3 – Annual	-	6.1	6.1	10.5	10.5	100

*Assumes that coal-fired units 1-3 are still operating. WEPCO would retire units 1-3 before Phase 1 begins operation.

Offsets

The PWGS is located within an area which has been designated as a severe ozone non-attainment area. Since the potential emissions of volatile organic compounds (VOC) from the facility are greater than 25 tpy, the facility is considered a non-attainment area major source, per s. NR 408.02(21)(a)1.d., Wis Adm. Code. The requirements of s. NR 408.04 to 408.10 Wis. Adm. Code apply with respect to any air contaminant for which an applicable source is major, and in the case of a modification, would result in a significant net emission increase for that pollutant, per NR 408.03(3), Wis. Adm. Code.

According to NR 408.06(3), Wis. Adm. Code, the total annual tonnage of emissions of any air contaminant (for which the area has been designated non-attainment) allowed from the net emissions increase resulting from a major modification shall be offset by an equal or greater reduction in the actual emissions of the air contaminant from the same or other sources. Within severe non-attainment areas for ozone the offset must be by at least a ratio of 1.3 to 1, per s NR 408.06(4)(d), Wis Adm. Code. s NR 408.06(2), Wis Adm. Code allows the net emission increase to be offset by emission reductions that have been obtained from other sources located within the same non-attainment area.

The net emissions of VOCs from this project would be 72.7 tons per year. This increase in emissions must be offset at a ratio of 1.3 to 1. Thus, the amount of emission reductions necessary to offset this project is 94.5 tons. W.E. Power has obtained the necessary VOC offset credits (95 tons) for the project from existing sources located in the nonattainment area.

Hazardous air pollutants (HAP)

NR 445 "Control of Hazardous Air Pollutants" exempts virgin fossil fuel, including natural gas, from the code requirements. Therefore, emissions caused by natural gas combustion from the proposed combined cycle plant are exempt from the NR 445 requirements. The exception for this project would be ammonia that is added to the flue gas before entering the SCR.

Ammonia is a regulated hazardous air pollutant (HAP) under NR 445 and is a Table 1 compound (hazardous air pollutants with an acceptable ambient air concentration, NR 445.04). W.E. Power is requesting an ammonia emission limit of 10 ppm. This is the equivalent of 48 lbs/hour from a stack. NR 445, Wis. Admin. Code requires that modeling be performed to determine air quality impacts for an hourly emission rate greater than 6.28 lbs/hour.

Air dispersion modeling shows that the maximum hourly modeled impact is 109.60 $\mu g/m^3$, the 24 hour modeled impact is 21.03 $\mu g/m^3$, and the annual impact is 1.09 $\mu g/m^3$. The ammonia emissions would meet Wisconsin Department of Natural Resources (WDNR) health standards.

Class I area impact

As part of a typical PSD permit application, a facility must demonstrate that emissions from new or modified sources would not adversely affect nearby "Class I" areas (e.g., national wilderness areas). The nearest Class I area is Rainbow Lakes Wilderness in northwestern Wisconsin. The distance from the Port Washington site to Rainbow Lakes Wilderness is more than 200 kilometers. Typically, proposed facilities more than 200 km from a Class I area do not require state or federal land manager review. For some large sources, because of prevailing air mass movements, the state or federal land manager may be concerned with potential emission impacts, and may require an air quality analysis. Because of the Port Washington site's location, and prevailing air mass movements, the proposed CTs would not be considered a large enough source to affect the Rainbow Lakes Wilderness.

Visibility impairment

Because the plant is not located near any "Class I" areas, a visibility impairment analysis for the proposed PWGS project is not required.

Sound and vibration

The only existing noise regulation covering the proposed project site are the limits established in the city of Port Washington's Conditional Use Grant (CUG) for the project. These limits, which apply between the hours of 7 P.M. to 7 A.M., are shown in Table 9. An additional noise limit of 48 dBA was set for Rotary Park, located across the harbor, north of the project site. The CUG also restricts noise from plant construction to the hours of 7 A.M. to 7 P.M.

To determine the incremental noise impacts of the proposed facility, the applicant conducted a detailed noise study. Potential noise receptor sites and residences are located west and north of the proposed project site. The applicant measured ambient noise at four locations surrounding the proposed project area. The sound monitoring locations were as follows: 1) new condominiums, approximately 330 feet north of the project site; 2) closest residence, located at the corner of South Wisconsin Street and West Chestnut Street, approximately 100 feet from the existing switchyard; 3) at the end of Milwaukee Street; and 4) residences to the west southwest that are physically shielded from current existing plant noise by the bluff, approximately 600 feet from the project site. Figure 3 illustrates the location of these receptor sites used in the noise evaluation. Existing measured sound levels and predicted sound levels are shown in Table 9.

Table 9 Noise evaluation

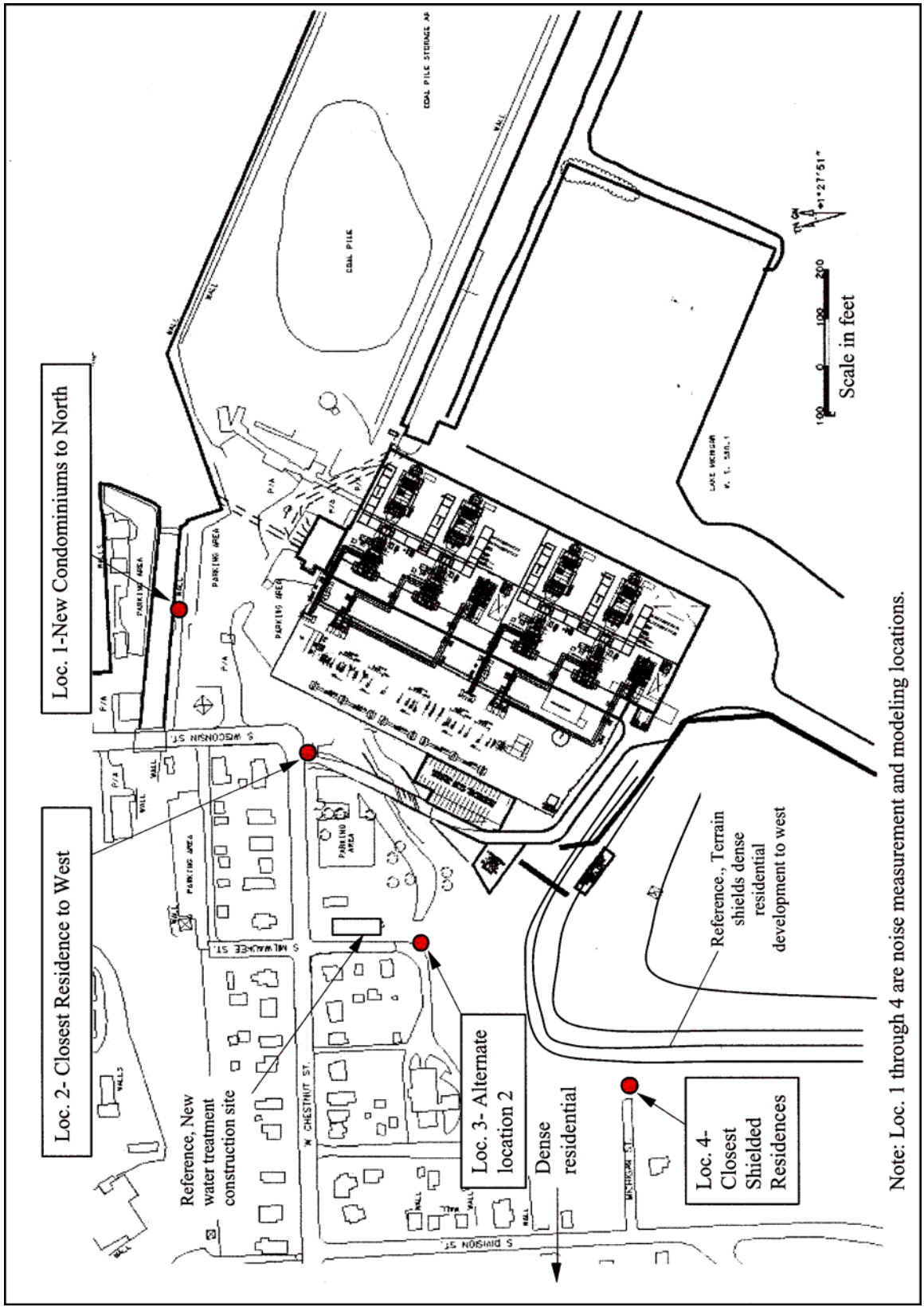
Location	Ambient Noise Level (dBA)*	Predicted Noise Level (dBA)	CUG Noise Limit (dBA)
1	51.0	47.9	50
2	49.9	49.0	50
3	48.4	44.6	48
4	43.0	42.2	43

*Values are an average of 10-minute samples taken at morning, noon, evening, and night over 2.5 days. At times the existing coal units were operating normally at full load, and at other times all were shut down.

The locations currently most impacted by noise from the existing Port Washington Power Plant are residences located north and west of the power plant. Existing noise sources include street traffic, transformer buzz, electric fans, steam venting, and coal handling and processing at the plant. The noise sources related to coal handling would be eliminated if the coal plants are retired in 2004.

Construction noise would consist mostly of a series of intermittent sources, most of which would be the diesel engines that power most construction equipment. During peak construction periods, work may occur for 10 to 16 hours per day. Construction is planned to begin in April 2003 and continue for a period of about five years, until March, 2008.

Figure 3 Noise measurement and modeling locations



Operational noise would occur throughout the power plant's life. Major noise sources would include combustion turbine generators, heat recovery steam generators, steam turbine generators, generator step-up transformers, and roof top ventilation fans. Noise attenuating equipment and materials would be incorporated into the equipment design to minimize noise impacts on the surrounding area. Noise attenuating building materials would provide additional noise attenuation.

The plant would be designed so that noise levels during operation would increase no more than 3 dBA from the existing ambient noise levels at the nearest residences. Such an increase is barely perceptible. Noise levels, once the new plant is operating, are predicted to be lower than current levels (see Table 9). This noise level decrease can be attributed to the new power plant being quieter than the existing power plant. The maximum noise level at any of the four locations is predicted to be no more than 49 dBA, which is typical of an urban residential neighborhood. It is expected that a careful observer would only detect the plant in the very early morning hours during calm and still wind conditions. The plant would not be detectable at other times or if the observation is made when ambient sounds such as passing cars, wind tree leaf rustle, insect noise, or other sources are present.

To achieve this level of noise control, a number of noise abatement measures would be used, the most important of which is the applicant's commitment to enclose the power generation equipment in a building, both for sound containment and aesthetic considerations. Other measures could include sound baffles, silencers, and state-of-the-art muffling for steam venting and safety valves.

Operational noise emanating from the PWGS site may increase during plant construction as a result of the addition of construction noise to the noise of one or more operating generating units. Vibrations caused by excessive low-frequency noise are not typically associated with combustion turbine combined-cycle power plants but with poorly-designed simple cycle combustion turbine plants.

Visual Impacts

The Port Washington Power Plant is located on the west shore of Lake Michigan, surrounded by the city of Port Washington. The two existing stacks, approximately 500 feet tall, can be seen for several miles in any direction, especially from boats on Lake Michigan. A bluff blocks views of the plant facilities from south of the plant. However, transmission lines can be seen on top of the bluff. An electrical switchyard with the plant and the stacks can be seen from nearby residences west of the plant. Apartments located just north of the plant have a fairly clear view of the plant, switchyard, and coal dock. Landscaping, in the form of trees and shrubs, exists between the apartments and the existing plant and helps provide some screening.

Visual impacts would be greatest during the plant demolition and construction period. Cranes, earthmoving equipment, and other machinery would crowd the site and frequently be in motion. Construction materials, contractor office trailers, and worker vehicles would also be located on the site. While some people would consider such activity interesting, others may find it distracting from the recreational use of the Port Washington harbor. The marina and several parks are located north of the site and would have a view of much of the site. Nearby residences

to the north and west would have close-in views of construction site activity. Because the construction parking and materials storage area would be located on the raised bluff south of the plant, much of this area would be out of the direct line-of-sight of nearby homes, businesses, parks, and traffic on the north end of Division Street (CTH C). Boaters on Lake Michigan would have a clear view of activities on the east side of the plant.

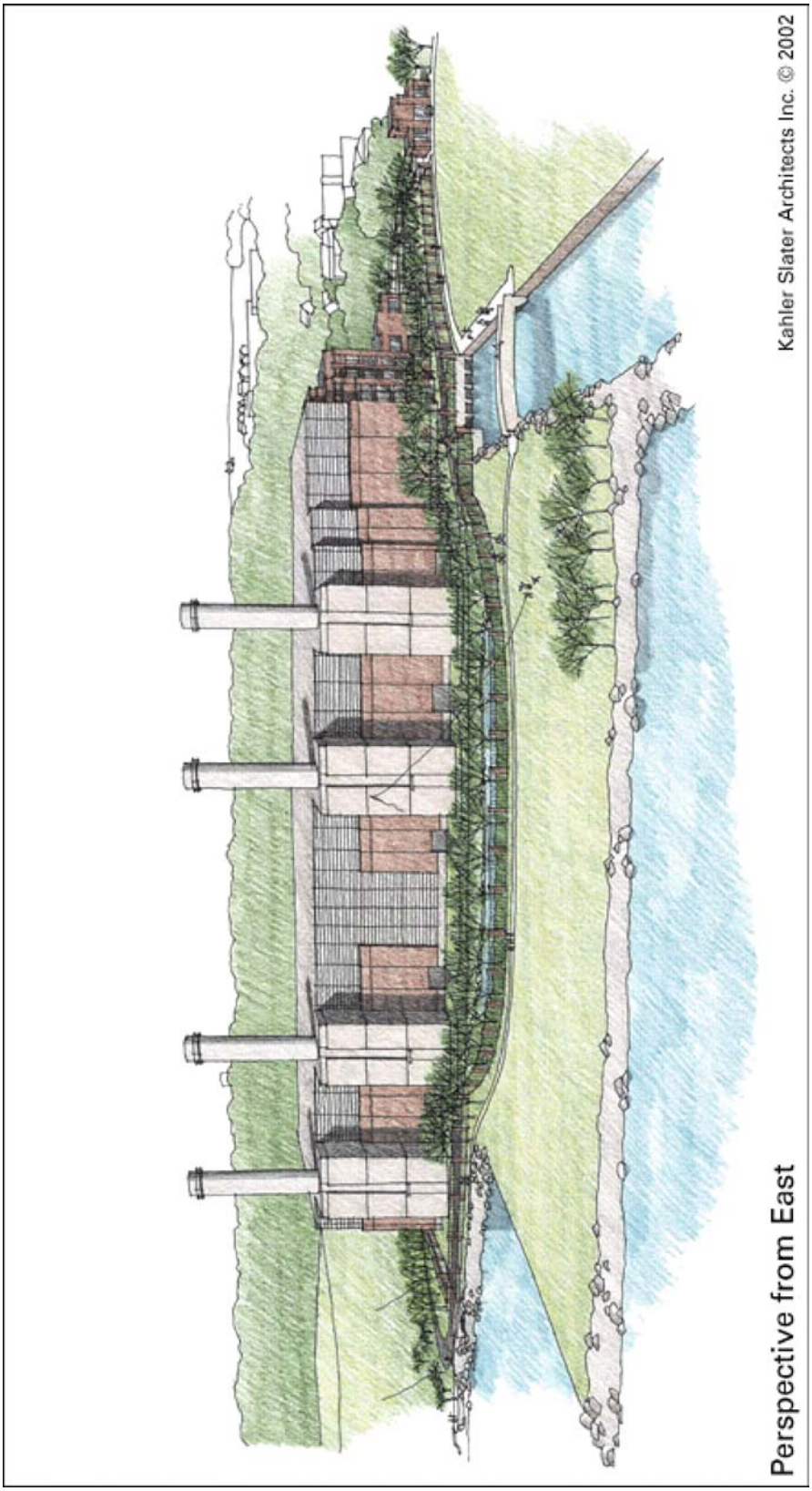
The project would change the appearance of the existing Port Washington site. The existing two 500-foot smokestacks would be removed, to be replaced by four 210-foot stacks. The existing west and north walls of the power plant building would be retained, but the building would be extended further south and east. The new portion of the building would be 15 to 18 feet higher than the existing building, in order to house the new machinery. An effort would be made to match the appearance of the new construction to that of the existing building. Figure 4 is a rendering of the proposed power plant as viewed from the east. The north end of the bluff located south of the plant would be cut back 100 feet and the resulting slope would be terraced. Removal of the coal pile and associated runoff basins would change the view from downtown and the harbor. Coal boats would no longer unload coal in the harbor. WE Energies would phase out coal storage and wastewater treatment facilities that are located on the previously filled bed of Lake Michigan. WE Energies has proposed to use portions of the existing coal dock for intake and discharge structures. The portion of the coal dock that is not needed for the continued operation of the power plant could be restored to public uses consistent with Wisconsin's public trust doctrine. WE Energies would need to continue coordination with the State of Wisconsin and the City of Port Washington to determine the ultimate use and the disposition of the abandoned portion of the coal dock.

Threatened and Endangered Species

The protected species known to occur in the vicinity of the power plant site include peregrine falcon (*Falco peregrinus*, state endangered), forked aster (*Aster furcatus*, federal species of concern and state threatened), lake sturgeon (*Acipenser fulvescens*, state special concern), American eel (*Anguilla rostrar*, state special concern), bloater (*Coregonus hoyi*, state special concern), and lake herring (*Coregonus artedi*, state special concern).

The Port Washington Power Plant's existing north stack has had a peregrine falcon nest box in place for almost a decade. Rock doves (*Columba livia*) and great horned owls (*Bubo virginianus*) attempted to nest in the box during the early years, and it was not until 2000 that a pair of peregrines took up residence at the site. The pair successfully fledged young the last three years. Peregrine falcons are protected under Wisconsin law, which prohibits the taking of any animal listed as endangered or threatened (Wis. Stat. § 29.604). Removal of the nest while peregrine falcons are nesting could result in adult abandonment of the nest and subsequent failure of the eggs or nestlings to survive. In order to avoid a take of peregrine falcons or their young, the nest box should not be disturbed while the falcons are nesting or while their young are present. The applicant plans to work with staff from the DNR's Bureau of Endangered Resources and the Milwaukee Public Museum to develop a plan to relocate the nest box and avoid impacts to the falcons.

Figure 4 Artist's rendering of proposed plant as viewed from the east



Suitable habitat may be present for forked aster along the creek on the western edge of the power plant property. This species prefers dry to mesic hardwoods, and is often found on streamsides or slopes with dolomite near the surface. Conducting a survey of the creek corridor between mid-August and late September would determine if the plant is present and if there is a potential for impacts to this specie.

Proper implementation of erosion and stormwater control measures on the construction site would prevent uncontrolled stormwater runoff from entering Lake Michigan. This would prevent construction impacts to the lake sturgeon, bloater, and lake herring.

Bluff Top Impacts

WE Energies owns land on top of the bluff located immediately south of the plant site. The bluff is between 50 and 100 feet above the Lake Michigan shoreline and Sauk Creek. The northern third of this land is an abandoned farm field with clay soils "sandwiched" between sand and gravel layers. The vegetation is grassy and brushy, with a few tree lines. The southern two-thirds of this land is cropland. The bluff top area has been used in the past as a construction staging area for the existing Port Washington Power Plant.

There are several small wetland areas along the bluff that are not connected by surface water. The wetlands are dominated by red osier dogwood but also contain green ash, lance-leaf goldenrod, reed canary grass, and other plant species. The adjacent upland areas have not been farmed for many years and support a mix of wooded areas dominated by green ash with herbaceous areas containing timothy, Kentucky bluegrass, and dominated by poison ivy.

The northern part of this area would be graded level and fenced for use as a parking and materials storage area during construction of the plant. A paved road would be built in this area, as well as two stormwater detention ponds. The parking lot would be graveled and the storage area would be reseeded to grass. The north end of the bluff would be cut back about 100 feet to allow for the expansion of the existing plant and would be graded to a more stable and safe slope. As proposed, an overflow channel would be constructed at the toe of the existing bluff, and plant expansion would occur on the north side of the channel. A covered walkway to be used by construction workers would be built down the north slope. The approximately 300,000 cubic yards of earth removed from the north end of the bluff would be stored on cropland south of the materials storage area. This earth would be used in the reclamation of the coal and wastewater treatment docks and the restoration of the bluff top when construction is finished. At the far south end of the site, a small berm would be constructed to ensure that surface water drainage is directed to the new sediment basins. No grading, vegetation removal, or earth disturbance would occur along the slopes facing Lake Michigan. Once construction work is finished, the applicant intends to restore the area to pre-construction vegetation conditions.

Grading work in the bluff area would require a DNR permit. Permit conditions would require submittal of an erosion control plan that complies with Wis. Admin. Code ch. NR 216 and the Wisconsin Construction Site Handbook in order to avoid impacts to Lake Michigan or Sauk Creek.

The applicant conducted a wetland delineation on the bluff top area. There are several small isolated wetlands on the bluff that would be avoided. The bluff top wetlands have a high plant species diversity and offer good wildlife habitat. They also help protect the bluff area by slowing down run-off that could cause erosion on the face of the bluff. The project would avoid most of the wetland areas but would involve approximately 0.1 acre of wetland fill for the construction access road. To receive a DNR wetland fill permit for the road construction, the applicant would have to demonstrate that there is no practicable alternative that would not impact the wetland and that the project would not have a significant adverse impact on the wetland.

Coal Storage and Wastewater Treatment Areas

The applicant proposes to phase out coal storage and wastewater treatment facilities that are located on the filled bed of Lake Michigan. The coal dock is approximately 14 acres in size and the wastewater treatment dock is approximately six acres. Removal of the coal pile would eliminate this source of blowing coal dust from the harbor and downtown area. A portion of the coal and wastewater treatment dock facilities would continue to be utilized by WEPCO for intake and discharge structures. Portions of the coal and wastewater treatment docks that are not needed for continued operation of the power plant could potentially be restored to public uses consistent with Wisconsin's public trust doctrine. The state of Wisconsin and the city of Port Washington would continue discussions with the applicant about ultimate disposition of these lands and responsibility for environmental or structural issues that relate to these facilities.

Five existing wastewater treatment basins (tertiary basin, east and west coal pile runoff basins, and north and south ash dewatering pits) are located on the filled lake bed, south of the coal dock. In 1998, these basins were evaluated by the DNR for compliance with the requirements for the lining of industrial lagoons and the design of storage structures contained in Wis. Admin. Code ch. NR 213. They were found to be in compliance, and the basins were approved for continued use. The DNR concluded the site conditions and waste types have not adversely affected waters of the state. While the project is under construction, no additional impacts are expected from the basins. One wastewater treatment basin would initially be filled in order to provide construction work space. Because the basins would no longer be needed upon completion of the project, they would all be abandoned. (The basins must be abandoned within two years from when they are last used, in accordance with the requirements in Wis. Admin. Code § NR 213.07.) Any accumulated sediment in the basins would be properly disposed of, either in place or removed, depending on the results of sediment characterization data. Any current concerns related to leakage of wastewater would be eliminated when these basins are filled.

Solid Waste

The WE Energies solid waste disposal facility for the Port Washington facility is located at the northeast corner of Interstate 43 and STH 32, in the town of Grafton, Washington County. The solid waste disposal facility is used mainly for disposal of coal ash from coal combustion to generate electricity. The solid waste disposal facility has an approved design capacity of 1,999,950 cubic yards. As of September 2002, approximately 1,313,868 cubic yards of ash have been disposed of within the facility, leaving 686,082 cubic yards of disposal capacity available. WE Energies would stop placing ash in the solid waste disposal facility in October 2004, when

the final coal-burning unit of the Port Washington facility is retired. WE Energies intends to remove the older ash from disposal facility cells 1 through 6A and reburn the ash at the WE Energies Pleasant Prairie facility. WE Energies would coordinate with the DNR Waste Program to modify the disposal facility's operations plan, in accordance with Wis. Stats. chs. 287 and 289, and Wis. Admin. Code chs. NR 500 to 538,

Agriculture

The southern area of the construction parking and material laydown area would be located on cropland owned by WEPCO between Division Street (CTH C) and Lake Michigan. Soil removed from the north face of the bluff would be stored on the cropland during construction. The farmer renting these fields would lose the use of these 44 acres, which are currently used for hayfield. There is no shortage of cropland in this area of Wisconsin. WEPCO plans to restore this land and make it available for lease as cropland again once construction is completed.

Site Access

The applicant proposes to build a construction access road with two entrances from CTH C (Division Street), which should allow construction access to the site without causing congestion on the streets of Port Washington's city center. Once construction of both units of the power plant is completed, the city of Port Washington intends to take ownership of the road for use as a public street. The city also is contemplating building a connector from the north end of this road to South Wisconsin Street to provide an alternative access route to the city center that would remove traffic from residential streets.

Traffic

Several streets are located near the project site. Wisconsin Street, Chestnut Street, and Division Street (CTH C) would be the main streets providing access to the construction site. Division and Chestnut form the western and northern boundaries of the site. STH 32 is less than one-quarter mile north of the site.

As proposed, WE Energies would develop a 30- to 40-foot wide paved access road from the bluff to the Port Washington Power Plant to provide truck and equipment access during demolition of units 1 through 4. Additionally, there would be two entrances to the access road and bluff from CTH C; one for trucks and the other for workers, along with a parking area for workers.

The majority of construction traffic would enter and exit the primary construction parking and laydown areas from the new entrances off of CTH C (Division Street). The nearby roads may experience some congestion due to personal vehicle and truck delivery traffic with peak traffic periods occurring at the beginning and end of construction labor shifts. The main routes expected to be utilized by construction traffic include Division, Wisconsin, and Chestnut Streets, as well as STH 32. Approximately 150 heavy equipment deliveries are expected for each generating unit. Other truck deliveries are expected to average approximately eight per day throughout the construction period. At peak construction up to 400 personal vehicles would be expected to enter and leave the bluff parking lot. Large equipment components would be delivered by barge or truck and moved to the construction site. The applicant intends to work

with local government officials to work out a mutually acceptable traffic plan to accommodate the construction traffic. Damage to local roads is not expected, but in the event that some damage does occur, arrangements would be made to have the roads repaired at the applicant's expense.

When the plant is fully operational there would be private vehicle traffic from up to 10 operations personnel per shift. This would be about a three-fourths reduction from current staffing traffic. Truck deliveries during the operations of the plant would be approximately two per day. During routine equipment maintenance, traffic could increase by 20 vehicles per day. The existing truck traffic related to coal ash handling (an average of six trucks a day) would be eliminated.

Jobs

Average employment during the construction period is estimated to be 300 workers. During peak employment the project is expected to generate approximately 500 jobs, with a payroll of approximately $150 million for both units. A substantial portion of the construction workforce is expected to come from eastern Wisconsin.

Once the proposed project is completed, 90to 100 fewer workers would be employed at the Port Washington site. Currently, 125 workers are employed at the existing coal-fired power plant. The proposed combined-cycle power plant would employ 30. Some of the excess workers may be able to take jobs at other WEPCO facilities. Only about a quarter of the current power plant employees live in Port Washington. Impacts to the community from possible worker relocations would be minimal.

Public Access

No change is anticipated in the public access to the shoreline near the cooling water discharge outfall. This area is a popular fishing spot for shore-based fishers. Access to this area is by means of a public lane that is separated from the rest of the Port Washington Power Plant site by a fence. Fishers would be able to access this area during construction and following construction.

The applicant plans to improve access to the lakeshore as part of the proposed project. Once construction is completed, there would be public access to the beach south of the plant. This access could take the form of a bicycle and pedestrian path leading from new public parking lots off of South Wisconsin Street. The applicant would also build a recreational path around the power plant.

WE Energies would phase out coal storage and wastewater treatment facilities that are located on the previously filled bed of Lake Michigan. WE Energies has proposed to use portions of the existing coal dock for intake and discharge structures. The portion of the coal dock that is not needed for the continued operation of the power plant could be restored to public uses consistent with Wisconsin's public trust doctrine. WE Energies would need to continue coordination with the State of Wisconsin and the city of Port Washington to determine the ultimate use and the disposition of the abandoned portion of the coal dock.

The coal crusher house could also possibly be rehabilitated for public use. The applicant is also discussing, with the city of Port Washington, the possibility of public access to the bluff top area south of the plant once construction is completed.

Shared Revenue

Under the current shared revenue distribution formula, the city of Port Washington and Ozaukee County would realize a significant increase in shared tax revenue as a result of the new facility. The applicant estimates that the city would receive $17 million and the county would receive $8.4 million over a 25-year period. The city's current annual budget is $6.8 million. The county's current annual budget is $68.3 million.

Due to the current shortfall in general state tax revenues, it cannot be assured that the current shared revenue distribution formula will continue to be used in the future. The current state budget proposal calls for reductions in shared revenue distributed to local governments, beginning in 2004. Some of these reductions could be realized through a less generous distribution formula. This could reduce the payments the city and county receive due to the PWGS project.

Regardless of the future of the shared revenue program, the applicant has agreed to make an annual payment of $500,000 to the city of Port Washington. There is some controversy over whether WE Energies ratepayers or shareholders should ear the cost of these payments.

Historical and Archeological Resources

Because federal permits are required for the project, the federal requirements of Section 106 of the National Historic Preservation Act may require a pre-construction archeological field survey of all areas to be disturbed by the project. No historic or archeological resources are known to exist on the Port Washington site or the proposed construction parking and laydown area. No impacts to historic or archeological resources are anticipated. If any historic artifacts are found during construction, work would cease at that specific location and the Principal Investigator, and/or the State Historic Preservation Officer (SHPO) would be notified. The applicant would coordinate with the Principal Investigator or the SHPO to protect any potentially significant cultural resources.

PWPP was constructed in 1935, and is listed in the Wisconsin Historical Society's Architecture and History Inventory. The plant was designated a National Historic Mechanical Engineering Landmark in 1980 by the American Society of Mechanical Engineers (ASME). ASME historic status differs from National Register of Historic Places (NRHP) listing. ASME listing is based on the technical and mechanical significance of the listed entity, and can be applied to devices (such as the original Evinrude boat motor in Milwaukee) rather than property. The ASME historic status of PWPP is based on the facility's operating efficiency, and recognizes the engineers who designed the facility, not the structure itself. The existing plaque would be maintained in a prominent position to continue to recognize the historic accomplishments that occurred at the site. While the plant is part of the state inventory of historic structures, it has not been assessed for inclusion in the State Register of Historic Properties. The plant is not listed on the NRHP and its NRHP status has not been determined.

VIII. Environmental Analysis of Water Supply Facilities

Water Source

Lake Michigan water would be used for once-through non-contact condenser cooling water and combustion air chilling. Lake Michigan is the sixth largest freshwater lake in the world, the third largest of the Laurentian Great Lakes, and the only Great Lake entirely within the borders of the United States. Lake Michigan is 307 miles long, up to 120 miles wide, and up to 925 feet deep. The lake has a surface area of 22,178 square miles, an average depth of 279 feet, and a volume of 1,172 cubic miles (1.29×10^{15} gallons).

Existing Lake Michigan environment

The Lake Michigan shoreline at the site is composed of concrete sea walls and other structures associated with the Port Washington harbor and the existing power plant. North and south of the plant site, the shoreline is composed of a sand beach adjacent to bluffs that are about 100 feet tall and composed of mainly clay soils. Wave action has prevented the widespread establishment of aquatic vegetation along the shoreline.

The Lake Michigan fishery consists of nearly 100 species. Table 10 lists the major piscivorous, common planktivorous, and benthic fish species. In the early 1900s, the construction of the Welland Canal around Niagara Falls allowed marine species, particularly the alewife and sea lamprey, to invade the upper Great Lakes. Sea lamprey and over-fishing combined to devastate the native piscivorous fish, which allowed the alewife population to explode. Other planktivorous fish in the lakes, including lake herring, whitefish, chubs and perch, suffered significant declines. Lamprey control and fish stocking programs (the DNR stocks salmon and trout in the Port Washington harbor) have improved predator fish numbers and reduced alewife overabundance. Even so, alewives often die in great numbers in early summer because, as marine fish, they are not well adapted to cold freshwater systems. Rainbow smelt, a small oceanic fish, were brought to Michigan in the early 1900s as forage fish for inland salmon fisheries. They soon established a population in Lake Michigan.

Table 10 Lake Michigan fish species

Major Piscivorous Species	Common Planktivorous Species	Benthic Fish Species
Chinook and coho salmon	Alewife	Yellow, black, and brown bullheads
Steelhead	Lake herring	Lake sturgeon
Lake, brown, and brook trout	Rainbow smelt	White sucker
Northern pike	Whitefish	Round goby
Muskellunge	Bloater	Common carp
Large and smallmouth bass	Yellow perch	
Walleye		

A 1998 survey of the Great Lakes identified 20 taxa of benthic macroinvertebrates in Lake Michigan with an average of about 7 taxa per sampling site (Barbiero and Tuchman, 2000). As a whole, the amphipod *Diporeia* (formerly *Pontoporeia*), tubificid oligochaetes, and sphaeriid snails dominated the Lake Michigan benthic macroinvertebrate community. However, in nearshore areas, oligochaetes were the dominant taxonomic group. The density of benthic

macroinvertebrates typically ranged from 1,500 to 6,500 organisms per square meter. Over the past several decades, Lake Michigan's southern basin has undergone major shifts in nutrient loading and has been invaded by the zebra mussel. Reductions in nutrient loadings have reduced the overall productivity of the lake and produced a decline in the density of benthic macroinvertebrate fauna, particularly oligochaetes and snails, observed between 1980 and 1987 (Nalepa, et al. 1998). The year 1988 marked the beginning of colonization of southern Lake Michigan by the zebra mussel and the beginning of a decline in the abundance of *Diporeia*. Nalepa et al. (1998) hypothesized that the filtering feeding by zebra mussels in nearshore waters decreased the amount of food available to the amphipod.

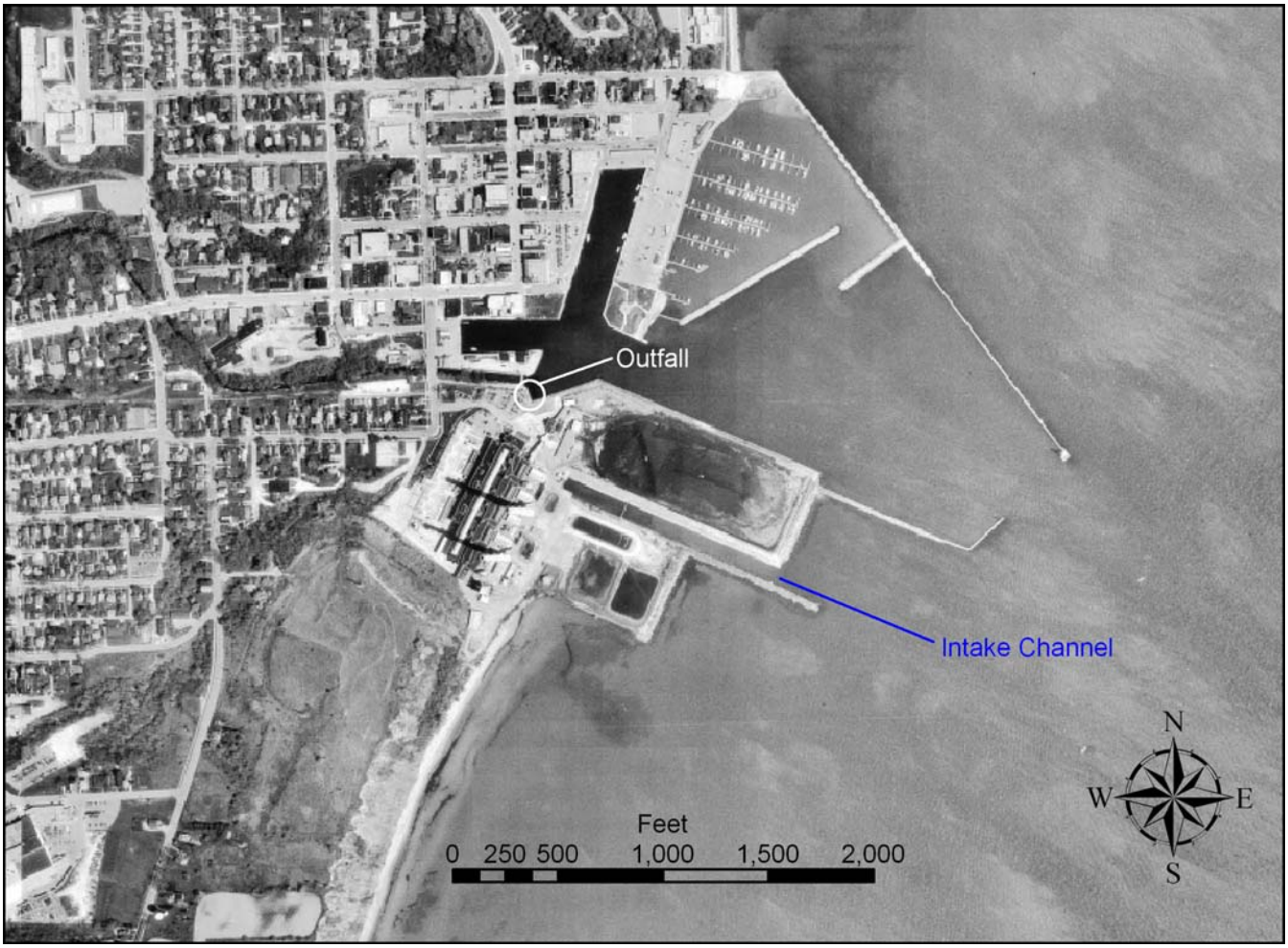
Existing cooling water intake structure

Description

The existing plant consists of four units with a total output of 320 MW. A fifth 80 MW unit has been decommissioned. The cooling water intake system contains bar racks, traveling water screens, and 10 55,000-gpm circulating water pumps for condenser cooling. There also are 11 service water pumps with a combined capacity of about 15,000 gpm. Consequently, the total design capacity of the intake and discharge tunnels is 565,000 gpm. In 1996 through 1998, average and maximum flow rates through the cooling system were 293,000 gpm and 440,000 gpm, respectively (EPA 316(b) questionnaire for the PWPP, January 2000). When two pumps per unit are operating, the average increase in cooling water temperature is 9°F (Alden Research Laboratory, Inc., 1995). During winter, when the lake water temperature is low, only one cooling water pump per unit is used, and the increase in cooling water temperature is approximately 18°F.

Cooling water is withdrawn from Lake Michigan via the existing intake channel which extends lakeward approximately 1,200 feet parallel to the south side of the coal dock (Figure 5). The intake channel is approximately 75 feet wide and 12 feet deep at the entrance to the lake. The re-circulation channel extends 300 feet from the shore parallel to and adjacent to the north side of the intake channel. The mouth of the re-circulation channel reduces to about 60 feet wide by about 10 feet deep or less due to sediment accumulation. Just before the intake channel forms a tunnel and enters the plant, a vertical steel bar trash rack prevents large debris from entering the tunnel. Near the trash rack, the intake channel depth increases to about 20 feet, but steel sheet piling reduces the width to about 40 feet.

Figure 5 Location of intake and discharge structures



The screen chamber, downstream of the trash racks, contains six identical vertical traveling screens. All six screens are continuously rotated at a rate of 10 feet per minute and are cleaned with a high pressure spray from March 1 through June 1 and Sept. 15 through Oct. 31. These two times of the year represent the peak stocking periods for juvenile trout and salmon in the Port Washington Harbor. Past studies have shown that continuous screen rotation provides the greatest chance of survival for fish that become impinged on the screens (see next section describing the Environmental Effects of this system). During other times of the year the screens are rotated and cleaned as needed. Debris is removed by a high-pressure spray at the upstream sides of the screens. Debris, fish and washwater from the traveling screens is carried to the 240-foot combined discharge tunnel via a single sluiceway. The tunnel discharges into the Port Washington Harbor through two 12 feet high by 10 feet wide openings (Figure 5).

De-icing is performed by directing heated condenser discharge water to the recirculation channel. Approximately 20 to 40 percent of this cooling water is used to prevent the build-up of ice in the intake channel and formation of frazzle ice on the trash racks and traveling screens.

This system also recirculates heated water for zebra mussel control. During zebra mussel treatments, all of the heated water is routed away from the main outfall over to the intake channel until the plant is able to maintain the water temperature in the upper 90°F range for several hours. The new facility would use these same systems for de-icing and zebra mussel control.

Environmental effects

Most intake systems have screening equipment installed at the front-end of the water flow to protect equipment such as pumps and condensers from damage or clogging. The blocking or trapping of larger organisms on these intake screens is known as impingement. Larger organisms such as juvenile and adult fish can enter the intake system, but cannot pass through the screens. If not removed in a timely fashion, these organisms will suffocate or suffer permanent physical damage, such as the removal of scales or their protective slime. Direct or delayed mortality can reach 100 percent can vary widely depending on the intake design.

A year-long study of impingement and entrainment of fish was conducted for the Port Washington Power Plant intake from March 1975 through February 1976 (WEPCO 1976) and provides a rough estimate of the fish community around the site at that time. Using impingement as a fish sampling method is somewhat biased however, because not all species and sizes of fish are equally vulnerable to impingement. A total of 411,434 fish representing 45 species (Table 11) were collected from the intake screens. Of these, 95.4 percent were alewives and 3.4 percent were smelt. Fifty-four percent of the impinged salmonids were newly stocked. Another impingement study conducted in 1980 through 1981 focused on sport and commercially important species (WEPCO, 1981). This study found the number of trout and salmon impinged increased by a factor of two and reflected a doubling of the stocking rate in the plant's vicinity.

It is expected that approximately 6 percent of the fish stocked in the harbor and Sauk Creek are impinged by the cooling water intake within a few days of stocking. Since the DNR has stocked an average of 300,000 trout and salmon in each of the years 1999, 2000, and 2001, the potential exists that he current intake system is impinging about 18,000 of the young fish each year.

Table 11 Fish species collected March 1975 – February 1976

Fish Species Collected on the Port Washington Power Plant Intake Screens,			
Rainbow trout	Lake whitefish	Common carp	Longnose dace
Brook trout	Bloater	Goldfish	Lake chub
Brown trout	Yellow perch	Burbot	Spottail shiner
Tiger trout	Bluegill	Shorthead redhourse	Emerald shiner
Lake trout	Pumpkinseed	Longnose sucker	Gizzard shad
Atlantic salmon	Green sunfish	White sucker	Alewife
Chinook salmon	Black crappie	Trout perch	Rainbow smelt
Coho salmon	White crappie	Nine-spine stickleback	Mud minnow
Channel catfish	Rock bass	Brook stickleback	Johnny darter
Black bullhead	Largemouth bass	Deepwater sculpin	Creek chub
Yellow bullhead	Northern pike	Slimy sculpin	Fathead minnow
Brown bullhead			

Source: WEPCO 1976

Entrainment occurs when smaller biota (such as plankton, fish eggs, and larvae) are drawn through the intake screen mesh and into the cooling system itself, where the organisms are subject to:

- physical contact with pipes, pumps, and condensers
- pressure and temperature changes
- toxicity due to the addition of biofouling agents.

Due to these forces, it is generally observed that there is 100 percent mortality to organisms that are entrained.

The entrainment impact study conducted by WEPCO in the late 1970's concluded that 44 percent of species entrained were alewife, 34 percent were smelt, and 16 percent were sculpin. Entrained fish eggs were 97 percent alewife and 3 percent smelt. There are not any known sensitive habitats or spawning of gamefish in the immediate vicinity of the existing intake.

Proposed operation of the existing intake for new facilities

The majority of water used would be for once-through cooling steam condensation. When both of the 545 MW combined-cycle units are operating, a maximum of about 535,000 gallons per minute (gpm) of lake water would be passed through the condensers and other heat exchange equipment (from the service water system). Removing excess heat from the steam and other operations is expected to raise the cooling water temperature by an average of about 10 degrees Fahrenheit (°F). To improve CT operating efficiency during warm weather, the inlet air would be cooled by passing this air over coils containing once-through circulating lake water. This system is expected to use up to about 25,000 gpm in a once-through mode and raise the temperature of the water 15°F. The maximum total withdrawal rate from the lake would be about 560,000 gpm. Thus, the capacity of the existing cooling water intake should be adequate for the new facilities. The water withdrawn from the lake would be returned with an average temperature of about 10°F above the ambient lake temperature.

Re-circulating heated cooling water back to the inlet channel to control zebra mussels has been effective and this method has the added benefit of eliminating the use of chlorine or other biocides. A zebra mussel treatment is usually performed in the fall when the lake temperature is warmer. The re-circulation of effluent is controlled by slowly opening and closing the outfall gate to avoid thermal shock to fish that may be near the water intake. There have been occasional fish kills in the past when fish were in the intake channel.

The Environmental Protection Agency (EPA) has drafted new rules regulating the design of cooling water intakes for new and existing facilities. For existing facilities such as Port Washington, the regulations are proposed to be effective in August of 2003. If the new rules are adopted in their current form, existing facilities may be required to reduce cooling water impingement mortality by 80 to 95 percent and entrainment by 60 to 90 percent. The rules would also require verification monitoring to assure compliance.

In anticipation of the EPA's new rule for cooling water intake structures for existing facilities, the applicant has proposed a modification to the cooling water intake design. It has provided a

conceptual design for a porous dike at or near the entrance of the channel with the lake. Engineering work for a detailed design has not been done.

In general, porous dikes are a type of filter system consisting of a large area of gravel to cobble-sized rocks placed in front of the mouth of the intake channel. The dike permits free passage of water but acts both as a physical and behavior barrier to aquatic organisms. EPA's most recent technical development document for cooling water intakes states that tests to date have shown that the porous dike technology is effective in excluding juvenile and adult fish. The potential for total elimination of impinged fish using this technology is not a certainty

The applicant's conceptual design includes a semi-circular porous dike across a portion of the harbor to create an intake pond. The dike would be about 1,500 feet long, running between the harbor entrance and the south side of the intake channel breakwater, with a top width of five feet. Water flow between the rock voids would be at a velocity of about 0.2 feet per second. The conceptual dike design is depicted in Figures 6 and 7. The purpose of the dike would be to reduce fish impingement mortality (fish trapped on screening equipment) by at least 80 percent and to reduce entrainment of organisms (those passing screening equipment and flowing through the cooling water system to the outfall) by at least 60 percent.

Figure 6 Porous dike lay-out

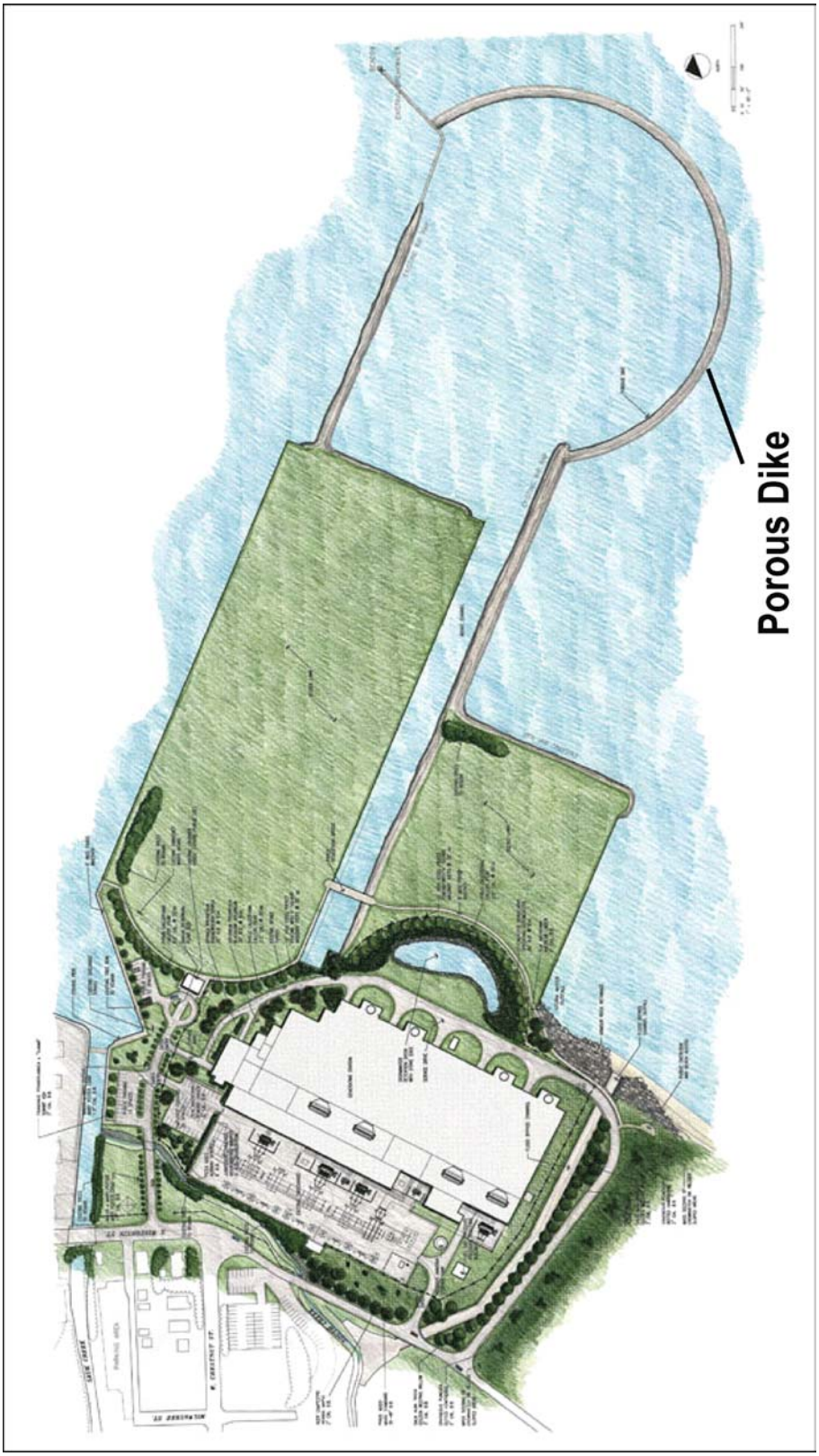
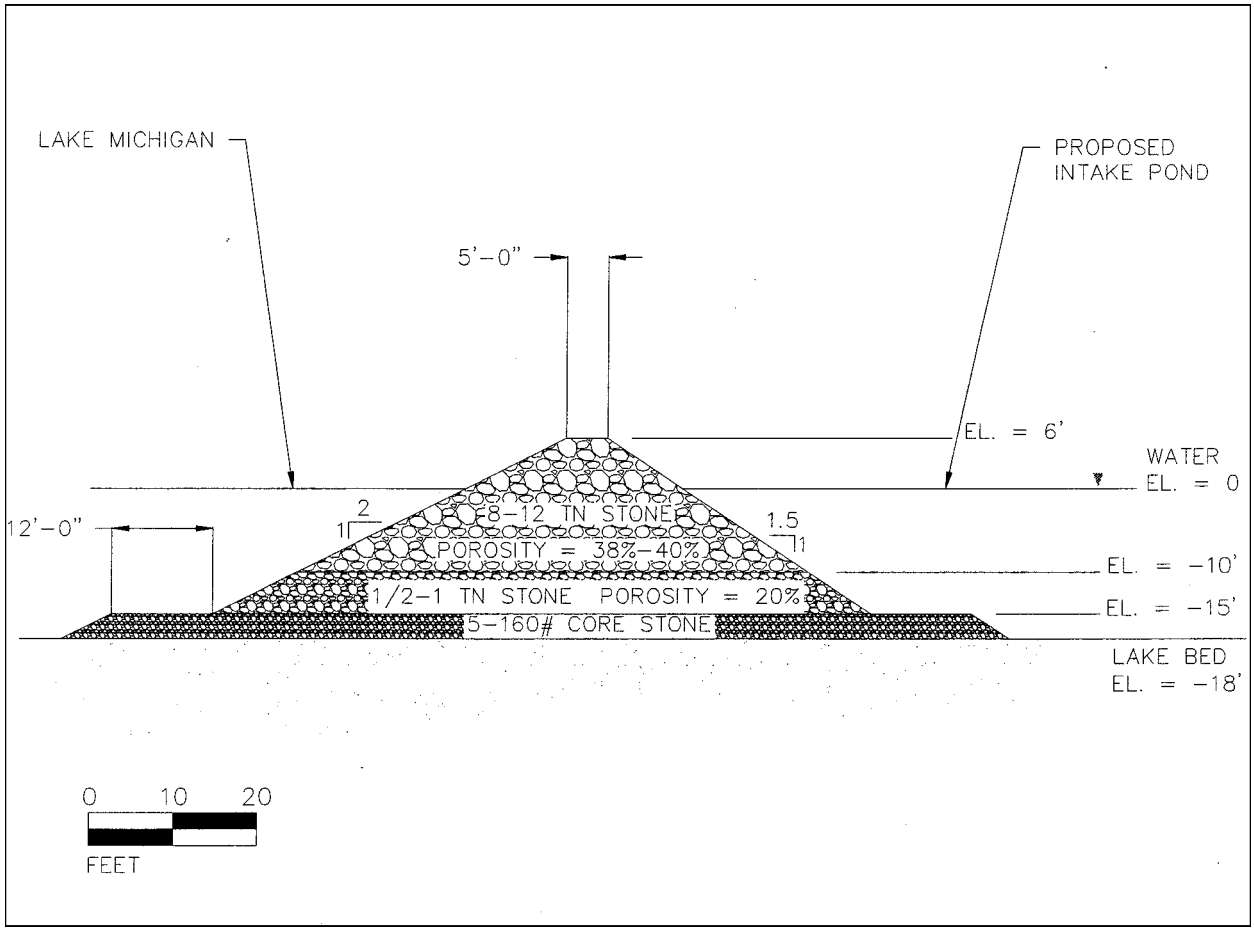


Figure 7 Porous dike cross section



Potential impacts of the porous dike

Construction impacts

To construct the porous dike, barge-mounted cranes would place large riprap filter stone (1/2 to 2 ton units) and protective armor stone (8 to 12 ton units) by controlled random dumping. The core stone (5 to 160 pound units) would be placed using a tugboat to position bottom dump barges. If required, a drag plate pulled by a tugboat would be used for some minor grading of the core stone prior to placement of the subsequent layers of riprap filter stone and armor stone.

Operation impacts

Although the proposed porous dike addition to the intake system would likely significantly reduce impingement of juvenile and adult fish, it's effectiveness in screening eggs and larvae is not established. Additional entrainment studies, both in the intake channel and the open lake in the vicinity of the proposed porous dike are being conducted by WEPCO during the summer and fall of 2002. This will provide the DNR with updated information to evaluate the species and densities of organisms likely to be entrained.

The applicant anticipates that the porous dike would require little maintenance. Sedimentation along the outer edge of the dike may require periodic dredging (perhaps removal of five feet of

sediment every five years) to maintain the original dike depth. Underwater inspection of the dike on a five-year interval would be required to identify areas of movement in the armor stone and potential erosion of the bottom material under the dike.

EPA has also identified major problems associated with porous dike systems such as debris clogging, ice build-up, and colonization of fish and other aquatic life such as zebra mussels. WEPCO has suggested that these issues can be addressed by designing the porous dike with very low intake velocities and the addition of a de-icing and anti-biofouling piping system that rings the structure.

The DNR would require evidence from the applicant that there is no alternative, such as a fence-like structure, that could be placed in the intake channel instead of the several acres of lakebed fill that would be required for the porous dike. Without detailed plans the impacts during construction cannot be predicted, but the long-term impact of construction of the porous dike can include:

- Isolation of a portion of the public lakebed.
- Loss of navigation in the area of the dike.
- Potential boating hazard during fluctuating water levels.
- Possible concentration of fish on the lake side of the dike, depending on the flow velocity at the structure.
- Creation of habitat areas for invertebrates, zebra mussels, plankton, minnows, etc.

Based on the conceptual design, the DNR water staff are concerned that the proposed dike may materially obstruct navigation. The applicant has been encouraged to consider other alternatives that meet Best Technology Available and limit encroachment on public waters of the State.

Water Treatment for Steam Supply

The existing demineralizer plant--two trains each with a capacity of 150 gpm--may be used to produce demineralized water for the new facility, although the installation of a new demineralized water plant would be considered as an alternative. The demineralizer plant capacity required for each combined-cycle unit would be 75 gpm. Demineralized water would be stored in two newly constructed demineralized water storage tanks (about 150,000 gallons each) for use as steam-cycle makeup. The storage tanks would be made of epoxy-lined carbon steel. The existing municipal water supply source would be used for potable uses, back-up fire protection, and for providing makeup water for the demineralizer system.

Existing water discharge

The primary effluent from the existing Port Washington Power Plant is once-through cooling water from the steam condensers. Both cooling water and wastewater are discharged through the combined discharge tunnel. The cooling water pumphouse is equipped with ten 55,000 gpm condenser cooling water circulation pumps. Under most conditions, both pumps would operate to produce a designed maximum circulation rate for the plant of 550,000 gpm (Table 12). The current maximum circulation rate is 440,000 gpm because one of the coal-fueled units is no longer operational (Table 12). With two pumps per unit operating, the maximum water

temperature increase across the steam condensers (ΔT) is 9°F. When the ambient water temperature is less than or equal to 45°F, only one pump per unit is operated to prevent over cooling the condensate. In general, under one-pump operation, the maximum ΔT across the condenser is 18°F.

Table 12 Cooling water discharge and heat input rates into the Port Washington harbor from the existing and proposed power plants

	Discharge (gpm)	Delta T (^{0}F)	Heat Input Rate (Billion BTU/hr)
Existing Plant			
Maximum discharge (Units 1-5)	550,000	9.0	2.48
Current maximum discharge	440,000	9.0	1.98
Current "one pump" discharge	220,000	18.0	1.98
New Plant			
Estimated maximum summer discharge	550,000	10.3	2.80
Estimated Maximum winter discharge	262,500	20.4	2.68

Source: WEPCO 2000

At 440,000 gpm, the heat input rate into the harbor is 3.96 million °F gpm or 1.98 billion BTUs per hour (BBTU/h) (Table 12). At the plant's design capacity of 550,000 gpm of condenser cooling water and a ΔT of 9 °F the resulting heat input rate is 2.48 BBTU/hr.

Existing Wastewater Treatment System

The current wastewater treatment system includes a tertiary settling pond, two coal pile runoff basins, and two ash dewatering basins, all of which would be properly abandoned. Closure plans would be prepared and submitted in accordance with NR 213, Wis. Adm. Code.

Proposed Wastewater Treatment System

Wastewater generated at the site would include discharges from the demineralizer system, blowdown from the HRSG, some storm water runoff, and runoff from the turbine hall floor drains. The existing waste water treatment facility would be abandoned in its entirety when the coal facility is fully retired. The new waste water treatment equipment would incorporate a waste water neutralization tank that treats the demineralizer effluent. An oil/water separator would be installed to collect water from floor drains. The plant is currently authorized to discharge under the terms and conditions of Wisconsin Pollution Discharge Elimination System (WPDES) Permit No. WI-00000922-6 that expires on June 30, 2005. Modifications to this permit are expected to be completed during the normal five-year cycle re-issuance process and in advance of the start-up of the first unit. Both cooling water and wastewater are discharged through the combined discharge tunnel (Outfall 001, described earlier under the water supply section). This tunnel also carries the debris and water from the vertical traveling screens at the water intake.

Some wastewater would be handled off site by a licensed contractor, including most of the wastewater generated from cleaning the HRSG tubes. Final water rinses of the tubes may be routed to the existing wastewater treatment plant. Wastewater from the CT compressor cleaning

operations would be stored in a holding tank and treated off site. Sanitary waste would continue to be routed to the existing municipal sanitary sewer system.

Potential Water Discharge Impacts

Environmental impacts on Lake Michigan due to the wastewater discharges from the power plant are not expected to change significantly from current conditions. Conversion of the power plant from coal- to gas-fired would reduce wastewater treatment needs. Some sources of process wastewater are eliminated, including coal pile runoff, and ash handling water. Compressor and equipment wash wastewater, including the cleaning waste from the heat recovery steam generators, would be taken offsite for treatment. The laboratory sinks and analyzer drains would discharge to the sanitary sewer. This should improve the quality of the remaining process wastewater, which includes the demineralizer, boiler blowdown, and floor drains. The process wastewater would be treated by pH adjustment, and oil and grease removal before discharging. The once-through cooling water, used for the steam condensers and inlet air cooling system, is expected to be similar in volume to the current discharge design capacity. The amount of heat discharged is not expected to change significantly.

The current cooling water discharge is diluted with harbor water by a factor of two. The existing discharge is not known to have caused any thermal shock problems in aquatic life. The WPDES permit currently does not contain a temperature limit, but the DNR is in the process of promulgating rules for thermal discharges to protect against temperature increases that could adversely affect fish and aquatic life. The applicant believes it would be able to meet future permit temperature limits with its plant design.

The cooling water discharge for the new facilities would be, on average, 10°F to 20°F above ambient lake temperature, depending on whether one or two condenser cooling water circulation pumps are operating per unit. The new cooling water discharge would be operated to prevent any sudden temperature changes.

To prevent the water intake channel from icing in the winter and to control zebra mussels, heated cooling water effluent is routed through an alternate outfall that re-circulates it back to the intake channel. There have been occasions of fish kills in the past when fish were in the intake channel. The applicant has proposed a possible modification to the existing water intake that involves constructing a porous rock dike at the entrance to the intake channel. This would likely reduce the number of fish entering the area where they could be exposed to the thermal treatments.

Stormwater Facilities

A permanent stormwater retention pond would be constructed in the plant yard between the existing Unit 4 and 5 stack and the west coal pile runoff basin. All site runoff would be routed to the pond. The outfall from the pond would discharge to the south side of the existing dock. This pond would be needed for plant construction runoff control until 2008 and would continue to provide storm water runoff control from the power plant site during the normal operation of the plant.

Two additional permanent stormwater basins would be constructed on the bluff top south of the power plant. Both basins would be used for sediment removal during construction and to control runoff from the construction parking and laydown areas that would be constructed on the bluff top. Both would be on the west boundary of the bluff top and are designed to be dry detention basins. The northernmost basin would discharge to a drainage tile that flows to a ditch on the north face of the bluff. The southernmost basin would discharge to an existing culvert under Division Street (CTH C). The basins would be designed to provide a minimum of two days dewatering to facilitate sediment particle settling. Each basin would attenuate the post-development flows to less than the existing pre-development flows. The ponds would be slightly oversized to provide space for sediment accumulation.

The north end of the bluff would be regraded to a 2:1 slope in a stepped fashion, to improve slope stability. Drainage tile would be installed along the entire bluff face. These drainage tile would be routed to a main drainage tile which would discharge directly to Lake Michigan.

An overflow bypass channel would be constructed near the base of the north end of the bluff. This bypass channel would carry away to Lake Michigan excess water that backs up in a tributary to Sauk Creek located west of the Port Washington Power Plant Substation. In the past, after very heavy rainfall, this stream has flooded the substation. The channel would have a riprap bed and banks lined with gabions. The inlet would be on the east bank of the tributary, between the power plant and the bluff. The channel would be designed so that the water elevation in the natural creek channel (downstream of the diversion point) would not get higher than the elevations seen during a 10-year storm and would remain within its banks. Except when conveying stormwater, the overflow bypass channel would be dry. Base flow in the creek would not change, and small storm events would still provide some normal scouring and sediment movement in the natural creek channel. Guard rails would be installed on both sides of the channel.

Stormwater Discharge Impacts

The storm water pollution prevention plan, prepared in accordance with the Tier 2 general storm water permit issued to the existing Port Washington Power Plant, requires best management practices to minimize or eliminate contaminants in runoff from the site. With the location of the power plant on the shore of Lake Michigan, the control of runoff is important because there is less opportunity to infiltrate storm water before it enters the lake. The management plan would be updated to reflect changes due to this project. Elimination of the coal pile would be a significant improvement that would eliminate a pollutant source that contributed coal particles (fines) and dissolved metals to the runoff and wastewater discharge. Open space created from the abandonment of the wastewater basins and the coal pile would diminish the potential for contaminated storm water from the site.

During the construction period there is the potential for increases in storm water runoff and contamination from suspended solids from disturbed soil. The construction site storm water permit that would be issued for the project would require best management plans for controlling runoff to alleviate this concern. The applicant would be required to implement Best Management Practices (BMP's) that are in compliance with the Wisconsin Construction Site Best Management Practices Handbook at the PWGS. BMP's shall include, but not be limited to:

- sequencing of construction activities to limit the amount of land disturbance to the maximum extent practicable
- installing temporary sediment basins for drainage areas over five acres
- installing sediment traps for drainage areas over two acres
- temporary seeding and mulching of any disturbed areas within seven days of inactivity
- installing ditch checks
- installing silt fence
- providing dust control
- providing permanent vegetative cover once the project is complete

If proper BMP's are designed and installed according to the Wisconsin Construction Site BMP Handbook, erosion controls can provide up to 80 percent removal of Total Suspended Solids compared to the use of no BMP's. All erosion controls must be inspected weekly and after rain events to ensure they are functioning properly. The erosion control plan must be amended if it is determined that current controls are not providing adequate control.

Because work would take place near the tributary to Sauk Creek, construction of the overflow bypass channel has the potential to cause sedimentation of the tributary. The DNR would review the project as part of its permitting process to ensure that the new channel does not result in a reduction of flow during low flow conditions or loss of flushing flows during moderate storm events that are needed to continue to move sediment downstream.

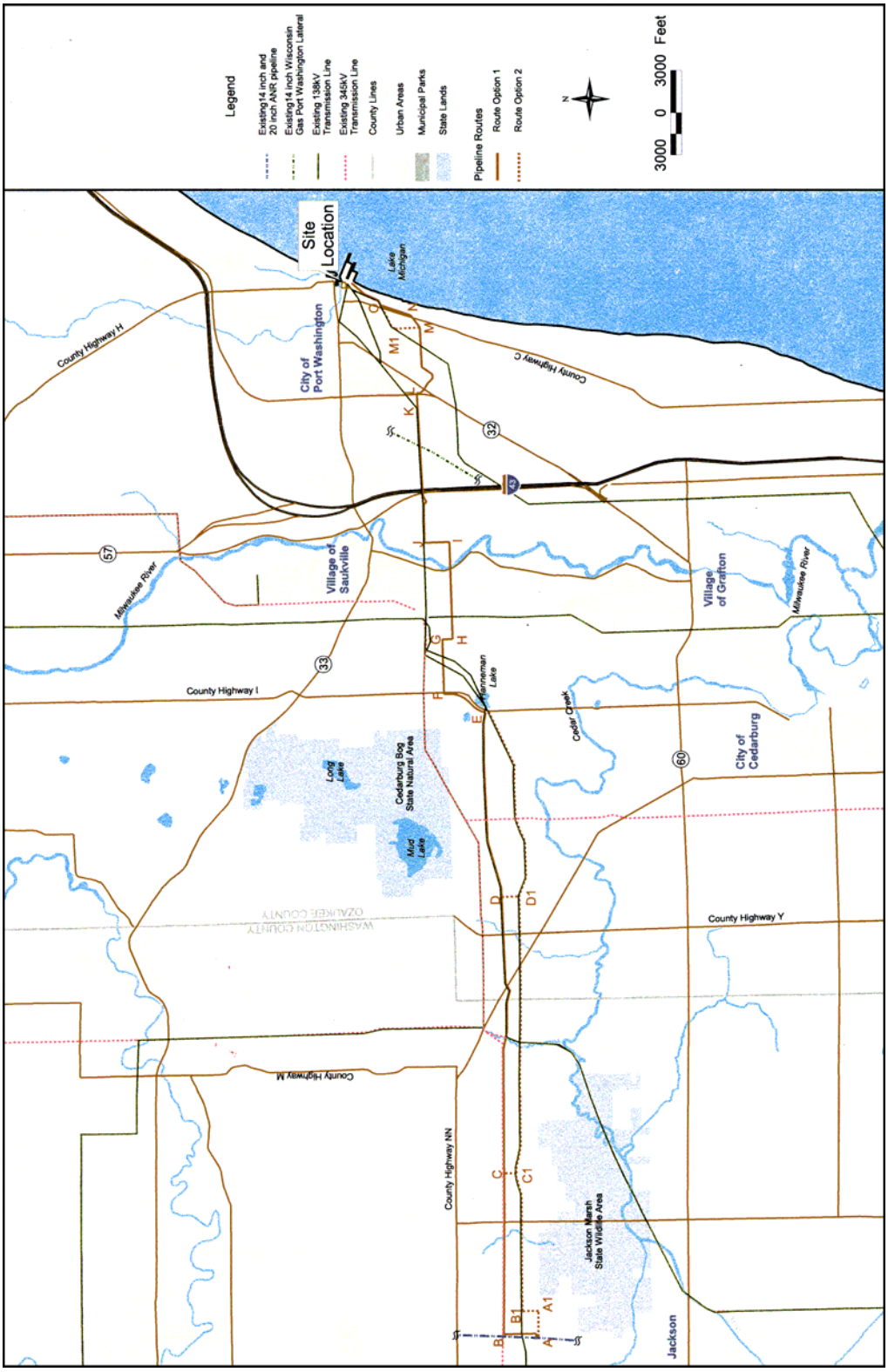
IX. Natural Gas Pipeline Facilities Related to the Power Plant

Natural Gas Pipeline Design and Routes

Wisconsin Gas Company (WGC) has proposed a new high-pressure natural gas pipeline to connect the proposed PWGS to existing ANR Pipeline Company (ANR) pipelines. The proposed gas pipeline would also connect to and provide support for the existing WGC distribution system in the Port Washington area. The proposed gas pipeline would consist of about 14 miles of 24-inch diameter steel pipeline and about 2.5 miles of 20-inch diameter steel pipeline. Construction of the pipeline would require a construction work space of up to 75 feet in width. A 30-foot wide permanent easement would be maintained over the pipeline.

WGC described two proposed routes for the natural gas pipeline in the project application. The general location of the two proposed gas pipeline routes are shown on Figure 8, which also identifies nodes between segments of the gas pipeline routes. Both routes start at the ANR Hartford Gate station near the village of Jackson, Washington County. From this point, the two routes head eastward for about 11 miles, each following an existing electric transmission line corridor. The remaining 5.5 miles of each route are a combination of new easements and corridor-sharing along roads and electric transmission lines.

Figure 8 **Proposed natural gas pipeline routes**



Route description

Starting from the ANR pipeline connection on the west end of the gas pipeline routes, the routes head eastward, paralleling existing electric transmission lines, for about 8.5 miles through gently rolling land that is primarily agriculture, with scattered forests and wetlands (nodes A to E). The two routes then join, heading north and east adjacent to roads through a low-density residential area between nodes E and G. The combined route then heads generally eastward through agricultural lands to node J, follows an existing electric transmission line through agricultural land to node L, then continues east and north to the power plant site through an area of mixed commercial, industrial and residential uses.

Construction Activities

WGC would construct the natural gas line using standard pipeline construction practices and would comply with all applicable construction and safety codes. A typical sequence of events for natural gas pipeline construction is shown in Figure 9.

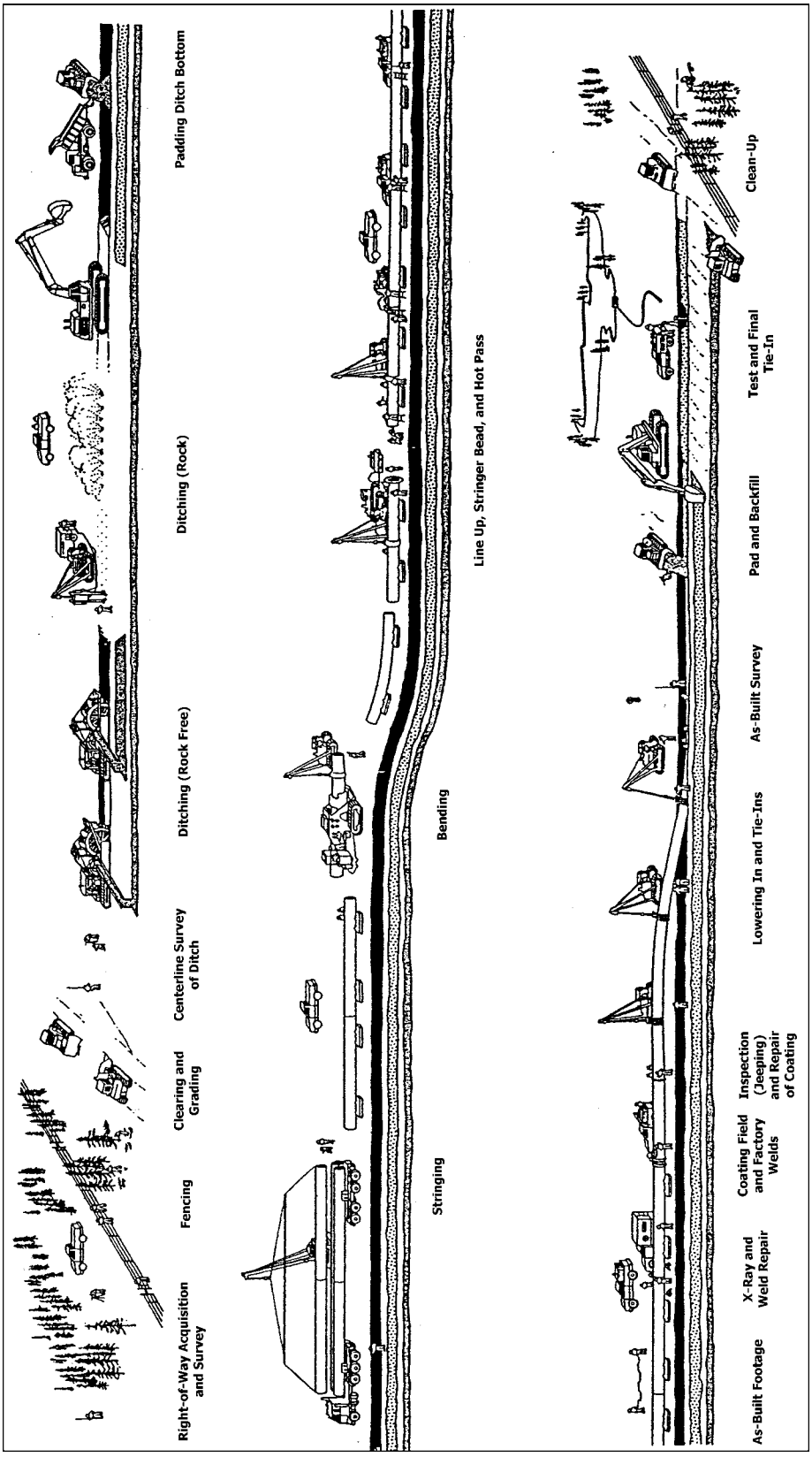
WGC developed construction plans that were submitted as part of its application. Two of the plans, the Wetland and Waterbody Construction and Mitigation Plan, and the Erosion Control, Revegetation, and Maintenance Plan are based on standard construction requirements developed for pipeline construction by the Federal Energy Regulatory Commission. The third plan, the Agricultural Mitigation Plan, was developed to reflect recent pipeline construction procedures used elsewhere in Wisconsin for large pipeline projects.

The gas pipeline construction would commence following the receipt of all required permits and the acquisition of sufficient ROW. Pipeline construction would begin with the preparation of the work area. If necessary, vegetation clearing and surface grading would be done to provide a sufficiently clear and level area to facilitate pipe-laying operations and allow passage of required construction equipment. Clearing and grading, if required, would be done on the minimum area necessary and in such a manner as to minimize interference with existing natural drainage.

Following clearing and grading operations, a trench would be dug for the pipeline. The width of the trench would typically be approximately 14 inches greater than the diameter of the pipe and the depth of the trench would be sufficient to allow a cover of at least 36 inches above the top of the pipe. Material excavated during trenching operations that is suitable for backfill would be temporarily piled on one side of the ROW, separating topsoil and subsoil, if applicable. Material that is unsuitable for backfill or in excess of backfill needs would be hauled away to a suitable location. Prior to beginning trenching operations, standard precautions would be taken to identify and avoid any existing underground utility lines that cross the ROW. Proper erosion control practices would be employed to minimize erosion during trenching and construction activities.

Railroads and large highways would be crossed, when feasible, by boring under them and installing the pipe through the bore hole. Crossings of driveways would normally be accomplished by open cut. Crossings accomplished through cuts would be coordinated to ensure that any disruption to traffic would be minimized.

Figure 9 Pipeline construction events



Pipe sections that have previously been delivered to one or more staging areas in the vicinity of the project site would be positioned along the prepared ROW. The pipe sections would then be lined up on supports and welded into a continuous pipeline along the side of the trench. A qualified inspector would inspect completed welds visually by using x-ray equipment. An external coating that is applied at the pipe mill would protect the pipe from corrosion. Following inspection of the welds, a coating would be applied to each welded joint and the coating on the remainder of the pipe would be inspected and repaired as necessary.

The bottom of the trench would be inspected to ensure that it is free of rocks and debris. If necessary, sand or soil padding would be placed in the bottom of the trench. The pipeline would then be lowered into the trench using side-boom tractors. A final inspection would be done to ensure that the pipeline is properly placed on the bottom of the trench, that all bends conform to the alignment of the trench, and that the pipe coating has not been damaged. The trench would then be backfilled, using material originally excavated from the trench, if possible. The fill would be compacted to avoid future settlement. Finally, the ROW would be restored to the extent possible to pre-construction conditions. Surface grading would be done to reestablish natural contours. Revegetation would be accomplished in a manner compatible with pre-construction conditions and adjacent vegetation patterns. Roads and paved driveways crossed by open cutting would be repaved. Pipeline markers would be installed at power lines, river crossings, road crossings, and other locations according to safety code requirements. The markers would identify WGC as the pipeline operator and would display emergency telephone numbers.

Potential Environmental Impacts

Agriculture

Agriculture is the major land use along the western two-thirds of the two proposed natural gas line routes. Crops grown in the area are generally commonly raised crops such as feed corn, soybeans, and alfalfa.

WGC included in its application an Agricultural Mitigation Plan, which was developed to reflect recent pipeline construction procedures used elsewhere in Wisconsin for large pipeline projects. The construction practices contained in the Plan are designed to reduce impact of pipeline construction on erosion, mixing of soil horizons, compaction, drainage system damage, introduction of excessive rocks into topsoils, and proliferation of weeds. Following the requirements of the Agricultural Mitigation Plan during construction of the proposed gas pipeline should result in substantial protection to the soil resources and agricultural productivity of lands crossed by the proposed gas pipeline project.

Pipeline construction through agricultural lands can result in short-term losses and temporary yield reductions in crops near the construction activities. Crops growing within both the permanent and temporary easement areas would be removed for the construction of the pipeline, likely resulting in the total loss of those crops in the year of construction. Dust from construction work can coat leaves on nearby crops, encouraging crop diseases or reducing yields. The effects from dust coating are limited to the year of construction. The land over the pipeline could be farmed in subsequent years. There may be, however, some crop productivity decrease for some time after construction, the magnitude and duration of which depends on how well standard

pipeline construction techniques designed to minimize soil impacts are implemented during construction.

The agricultural impacts noted above are generally short term and a primary concern relates to adequate monetary compensation to the landowners for lost crops during the year of construction and any reduced crop productivity in subsequent years.

Endangered, threatened, and special concern species

PSC staff consulted with staff from the Wisconsin Department of Natural Resources (DNR) Bureau of Endangered Resources (BER) regarding the potential impact of the proposed natural gas line on endangered, threatened and special concern species.

The Hine's emerald dragonfly (*Somatochlora hineana*), a federal and state endangered dragonfly, occurs in the vicinity of the proposed routes. This dragonfly prefers wetland habitats characterized by thin soils over dolomite bedrock with marshes, seeps, and sedge meadows. Due to the habitat requirements of this dragonfly, particularly the habitat conditions needed for its larval stage, the Hine's emerald may be highly sensitive to construction activities in wetlands, including the construction of large pipelines. BER staff initially identified three wetlands with potential habitat for the Hine's emerald dragonfly. BER staff conducted preliminary assessments of these wetlands to determine whether suitable habitat was present. One of the three wetlands does not have suitable habitat for the Hine's emerald dragonfly, but the other two do appear to have suitable habitat. In addition, the BER staff located an additional wetland area that appears to be suitable for the Hines's emerald dragonfly. WGC retained an expert specializing in dragonflies to conduct detailed surveys of the potential Hine's habitat located along the gas pipeline routes. Based on the results of the detailed surveys, BER concluded that the Hine's emerald dragonfly would not be affected by gas pipeline construction along the proposed routes.

BER has a record of swamp metalmark (*Calephelis mutica)*, a butterfly listed as endangered in Wisconsin, occurring within several miles of the proposed gas pipeline routes. This species prefers fens, wet meadows and tamarack bogs containing swamp thistle. Although BER does not have records for swamp metalmark within the proposed pipeline corridors, there is a slight chance that wetlands along the routes may have suitable habitat for this species. BER has requested additional information from WGC to determine the likelihood for this species to occur along the gas pipeline routes. WGC has indicated that this additional information will be collected in the near future. In addition, WGC has agreed to incorporate into project construction any appropriate construction modifications deemed necessary by BER to protect this species, if surveys indicate that it is present along the gas pipeline routes. With this construction condition, potential impacts to swamp metalmark are expected to be minor.

The Butler's garter snake, (*Thamnophis butleri*), a snake listed as threatened in Wisconsin, occurs in Ozaukee County in the vicinity of the proposed routes. This species prefers wet-mesic prairies, marshes, and adjacent grassy and vacant areas. If each wetland and stream crossed by the proposed gas pipeline is directionally bored between November 1 and March 15, impacts to Butler's garter snakes can be avoided. If this is not possible, however, an Incidental Take Authorization would likely be necessary prior to construction along either Route 1 or 2. BER has indicated that it would work with WGC to develop measures to avoid and minimize impacts

to this species to the fullest extent possible once a final gas pipeline route is selected. BER has issued Incidental Take Permits for other construction projects affecting Butler's garter snake habitat, including large diameter pipelines similar to the proposed gas pipeline. Based in past experience with other construction projects, construction of the proposed gas pipeline incorporating relatively minor construction conditions, should not result in any significant impacts to Butler's garter snakes.

BER identified records of several rare fish that are known to exist in the Milwaukee River. WGC proposes to install the gas pipeline by directionally boring the pipe underneath the Milwaukee River. BER has indicated that the installation of the proposed pipeline by directional boring under the Milwaukee River would avoid any impacts to these species. If directional boring is not feasible, WGC would have to receive a DNR Chapter 30 permit to cross the river using a surface disturbing construction method. BER staff would be involved in any DNR Chapter 30 permit process to determine what appropriate measures, if any would be needed to avoid impacts to these species. It is possible that if an open cut method of crossing the Milwaukee River were necessary, conditions placed on such a crossing method could result in a change in the location of the crossing.

BER identified several rare plant species that are found in the general area of the gas pipeline routes. While no records exist for these plants directly along the proposed pipeline routes, BER indicated that there is a chance they may inhabit wetlands found along the routes. WGC has agreed to survey wetlands along the gas pipeline routes to determine whether any of these rare plants might be present. In addition, WGC has agreed to incorporate into project construction any appropriate construction modifications deemed necessary by BER to protect any of these species, if present.

Wetlands and surface waters

The wetlands along the gas line routes consist of emergent and scrub-shrub wetlands, along with a few small patches of forested wetlands. The emergent wetlands consist primarily of herbaceous vegetation, including reed canary grass (*Phalaris arundinacea*), sedges (*Carex spp*) and cattails (*Typha spp.*). Shrubs are the dominant plant component in the scrub-shrub wetlands.

Construction and operation of pipelines can impact three major components of a wetland: the vegetation, the soils, and the hydrology. Construction of a pipeline results in a temporary removal of wetland vegetation. Longer-term vegetation effects vary depending on the type of vegetation present before construction. For example, forested and scrub-shrub wetlands would regenerate at much slower rates than emergent wetlands. In addition, the need to maintain a narrow (approximately 10-foot wide) tree- and shrub-free corridor over the pipeline for inspection purposes would result in a permanent change to these areas in forested and scrub-shrub wetlands, while the herbaceous vegetation found in emergent wetlands can regenerate over the entire ROW. Wetlands are also susceptible to post-construction colonization by aggressive invasive species, such as purple loosestrife or reed canary grass. Construction impacts on wetland soils can include changes in the soil profile and, consequently, changes in microbial activity, chemical conditions, and plant growth rates. Pipeline construction can also alter surface and subsurface water flow patterns, resulting in damage to the wetland's physical and biological structure and quality.

WGC has developed a Wetland and Waterbody Construction and Mitigation Plan to be followed for the proposed gas pipeline. This plan is modeled after a Federal Energy Regulatory Commission plan for interstate pipeline construction which was developed to reduce construction impacts to wetlands. In addition, WGC may be required to implement additional construction procedures or restrictions when constructing through wetlands or water bodies under the DNR permits needed for construction of the proposed pipeline.

Construction of the proposed natural gas line would directly affect about 15.1 acres of wetland if the gas line were built along Route 1 and about 12.4 acres if built along Route 2. These estimates are based on the assumption that construction activities occur within the entire 75-foot wide construction ROW needed to install the proposed pipeline.

WGC provided information in the application about the distance of wetlands crossed by different segments of the gas pipeline routes. The proposed Routes 1 and 2 differ for about 8.5 miles from their western starting point, then share a common route for much of the remaining distance to the power plant site. The western starting point for the gas pipeline routes is identified as node A in the application. The point where the two routes join back into a single route is identified as node E. Route 1 consists of segments A-B-C-D-E. Route 2 consists of segments A-A1-B1-C1-D1-E. WGC also provided information on two intermediate cross-over segments, C-C1 and D-D1. Construction of the proposed gas line along the unique portion of Route 1 (from nodes A to E) would directly affect approximately 12.1 acres of wetland and the unique portion of Route 2 would directly affect 8.9 acres of wetland. The wetland acreage affected between nodes A and E when combining portions of Routes 1 and 2 using the cross-over segments is shown in Table 13 (see also Figure 8). The combined route with the least direct effect on wetlands, 6.7 acres, starts from the western end using Route 2 eastward to node D1, then the D1-D cross-over segment, continuing eastward to node E on Route 1 (nodes A-A1-B1-C1-D1-D-E). The combined route that directly affects the greatest wetland acreage, 14.2 acres, starts from the western end, using Route 1 eastward to node D, then the D-D1 cross-over segment, continuing eastward to nose E on Route 2 (nodes A-B-C-D-D1-E). The two combined routes that use the C-C1 cross-over segment both directly affect between 10 and 11 acres of wetlands.

Table 13 Acres of wetlands and forest lands affected by gas pipeline segment combinations from Node A eastward to Node E

Route Combination (Node A eastward to Node E)	**Segments Included**	**Wetland Acres**	**Forest Acres**
Route 1	A-B-C-D-E	12.1	3.1
Route 2	A-A1-B1-C1-D1-E	8.9	6.6
2 - C/C1 - 1	A-A1-B1-C1-C-D-E	10.1	3.9
2 - D/D1 - 1	A-A1-B1-C1-D1-D-E	6.7	3.6
1 - C/C1 - 2	A-B-C-C1-D1-E	10.8	7.0
1 - D/D1 - 2	A-B-C-D-D1-E	14.2	7.3

WGC also provided information about proposed gas pipeline waterway crossings in Wis. Stat. ch. 30 permit applications submitted to the DNR. DNR has not completed review of the applications. Please see Table 13A.

Table 13A Proposed Port Washington to Jackson Lateral Gas Pipeline Stream and Wetland Crossings

X-ing No.[1] Route Option 1	Route Option 2	Waterway Crossing Location County	Town[2]	T N	R E	Sec	1/4 Sec	Wetland Type	Stream Name	X-ing Length[3] Ft	Construction Area[4] Ft²	Acres	Trench area Acres	Pipe Fill Area[5] Acres	Proposed Forested wetland[6] Acres	Corridor	Comment	Pipe Dia. in.	Pipe Wall Thickness Ft	Vol. Excavated Yd³	Vol. Filled/ Removed Yd³	Long Rip Rap/ Bank Protection Yd³
1-1		Washington	Jackson	10	20	5	SW	E1K	unnamed intermittent stream	100	6,000	0.14	0.02	0.005	Trench	n/a	not on WWI[7]	24"	1	130	11.6	22.2
1-1A		Washington	Jackson	10	20	5	SW	E1K	unnamed intermittent stream	1350	81,000	1.86	0.25	0.062	Trench	n/a	not on WWI[7]	24"	1	1,750	157.1	22.2
1-2		Washington	Jackson	10	20	5	NE	Upland/ Wetland		200	12,000	0.28	0.04	0.009	Trench	n/a	T-line	not on WWI[7]	24"	1	259	23.3	n/a
	2-1	Washington	Jackson	10	20	5	SE	E2K		200	12,000	0.28	0.04	0.009	Trench	n/a			24"	1	259	23.3	n/a
	2-2	Washington	Jackson	10	20	5	SE	Scrub/ Shrub		200	12,000	0.28	0.04	0.009	Trench	n/a	T-line	not on WWI[7]	24"	1	259	23.3	n/a
1-3		Washington	Jackson	10	20	4	SE	E1Kg	unnamed stream	350	21,000	0.48	0.06	0.016	Trench	n/a	T-line		24"	1	454	40.7	22.2
	2-3	Washington	Jackson	10	20	4	SE	E1Kg	unnamed stream	350	21,000	0.48	0.06	0.016	Trench	n/a	T-line		24"	1	454	40.7	22.2
1-4		Washington	Jackson	10	20	3	SW	E1Ka		375	22,500	0.52	0.07	0.017	Trench	n/a	T-line		24"	1	486	43.6	n/a
	2-4	Washington	Jackson	10	20	3	SW	E2K		200	12,000	0.28	0.04	0.009	Trench	n/a	T-line		24"	1	259	23.3	n/a
1-5		Washington	Jackson	10	20	3	SE	Scrub/ Shrub		1200	72,000	1.65	0.22	0.055	Trench	n/a	T-line	not on WWI[7]	24"	1	1,556	139.6	n/a
1-6		Washington	Jackson	10	20	2	SW	T3K		650	39,000	0.90	0.12	0.030	Trench	0.90	T-line		24"	1	843	75.6	n/a
	2-5	Washington	Jackson	10	20	1	SW	E2Kg	Cedar Cr.	500	30,000	0.69	0.09	0.023	Trench	n/a	T-line		24"	1	648	58.2	22.2
		Washington	Jackson	10	20	1	SW	E1Kg	Cedar Cr.	250	15,000	0.34	0.05	0.011	Trench	n/a	T-line		24"	1	324	29.1	22.2
1-7		Washington	Jackson	10	20	1	SW	E1Kg/ E2Kg	Cedar Cr.	650	39,000	0.90	0.12	0.030	Trench	n/a	T-line		24"	1	843	75.6	22.2
	2-6	Washington	Jackson	10	20	1	SW	E1K	tributary to Ceadar Cr.	500	30,000	0.69	0.09	0.023	Trench	n/a	T-line		24"	1	648	58.2	22.2
1-8		Washington	Jackson	10	20	1	SE	E1Kg		250	15,000	0.34	0.05	0.011	Trench	n/a	T-line		24"	1	324	29.1	n/a
1-8A		Ozaukee	Cedarburg	10	21	6	SW	Emergl wet meadow		550	33,000	0.76	0.10	0.025	Trench	0.76	T-line	Edge of ROW Tangent to wetland not on WWI[7]	24"	1	713	64.0	n/a
	2-7	Ozaukee	Cedarburg	10	21	6	SE	S3/E2K	unnamed intermittent stream	850	51,000	1.17	0.16	0.039	Trench	n/a	T-line		24"	1	1,102	98.9	22.2
1-9		Ozaukee	Cedarburg	10	21	5	SW	T3/S3K	unnamed intermittent stream	250	15,000	0.34	0.05	0.011	Trench	0.34	T-line		24"	1	324	29.1	22.2
1-10		Ozaukee	Cedarburg	10	21	5	SW	T3/S3K		1400	84,000	1.93	0.26	0.064	Trench	1.93	T-line		24"	1	1,815	162.9	n/a
	3-8	Ozaukee	Cedarburg	10	21	5	SE	S3/E2K		2500	150,000	3.44	0.46	0.115	Trench	n/a	T-line		24"	1	3,241	290.9	n/a
		Ozaukee	Cedarburg	10	21	5	SE	T3K		300	18,000	0.41	0.06	0.014	Trench	0.21	T-line	50 % shared corridor with I-line in S3/E2K	24"	1	389	34.9	n/a
		Ozaukee	Cedarburg	10	21	5	SE	T3/S3K		450	27,000	0.62	0.08	0.021	Trench	0.62	T-line		24"	1	583	52.4	n/a
1-11		Ozaukee	Cedarburg	10	21	5	SE	T3K		400	24,000	0.55	0.07	0.018	Trench	0.55	T-line		24"	1	518	46.5	n/a
1-12		Ozaukee	Cedarburg	10	21	4	NW	S3/E2K		500	30,000	0.69	0.09	0.023	Trench	n/a	T-line		24"	1	648	58.2	n/a
1-13		Ozaukee	Cedarburg	10	21	4	NE	S3/E2K		200	12,000	0.28	0.04	0.009	Trench	n/a	T-line		24"	1	259	23.3	n/a
1-14		Ozaukee	Cedarburg	10	21	3	NW	PEM		300	18,000	0.41	0.06	0.014	Trench	n/a	T-line		24"	1	389	34.9	n/a
		Ozaukee	Cedarburg	10	21	3	NW	E2H		450	27,000	0.62	0.08	0.021	Trench	n/a	T-line		24"	1	583	52.4	n/a
1-15		Ozaukee	Cedarburg	10	21	3	NE	S3K		300	18,000	0.41	0.06	0.014	Trench	n/a	T-line		24"	1	389	34.9	n/a
		Ozaukee	Cedarburg	10	21	3	NE	S3K		450	27,000	0.62	0.08	0.021	Trench	n/a	T-line	Edge of ROW Tangent to wetland	24"	1	583	52.4	n/a
1-16		Ozaukee	Cedarburg	10	21	3	NE	E2K		200	12,000	0.28	0.04	0.009	Trench	n/a	T-line		24"	1	259	23.3	n/a
1-17	1-17	Ozaukee	Cedarburg	10	21	2	NW	S3K		150	9,000	0.21	0.03	0.007	Trench	n/a	Road		24"	1	194	17.5	n/a
1-18	1-18	Ozaukee	Cedarburg	11	21	34	SE	E2Ka	Mories Creek	700	n/a	n/a	0.13	n/a	Bore	n/a	Road	Wetlands bored with creek	n/a	n/a	n/a	n/a	n/a
1-19	1-19	Ozaukee	Cedarburg	10	21	1	NW	T3/S3K		200	12,000	0.28	0.04	0.009	Trench	0.28	Road		24"	1	259	23.3	n/a
		Ozaukee	Cedarburg	10	21	1	NW	T3/S3K		500	30,000	0.69	0.09	0.023	Trench	0.69	Road	On Cauburg/Grafton border	24"	1	648	58.2	n/a
1-20	1-20	Ozaukee	Grafton	10	21	1	NE		Milwaukee River	200	n/a	n/a	0.04	n/a	Bore	n/a			n/a	n/a	n/a	n/a	n/a
1-21	1-21	Ozaukee	Grafton	10	22	6	NW	T3/S3K		300	n/a	n/a	0.06	n/a	Bore	n/a		Wetland associated with Milwaukee R.	n/a	n/a	n/a	n/a	n/a
1-22	1-22	Ozaukee	Port W	11	22	31	SW	T3/S3K		450	27,000	0.62	0.08	0.021	Trench	0.62	T-line	Edge of Row Tangent to wetland	24"	1	583	52.4	n/a
1-23	1-23	Ozaukee	Port W	11	22	31	SW	Emerg. Wet Meadow		700	42,000	0.96	0.13	0.032	Trench	n/a	T-line	not on WWI[7]	24"	1	907	81.4	n/a
1-23A	1-23A	Ozaukee	Port W	11	22	31	SE	Emerg. Wet Meadow		500	30,000	0.69	0.09	0.023	Trench	n/a	T-line	Edge of ROW Tangent to wetland not on WWI[7]	24"	1	648	58.2	n/a
1-24	1-24	Ozaukee	Port W	11	22	31	SE	PEM		300	18,000	0.41	0.06	0.014	Trench	n/a	Road	not on WWI[7]	20"	0.7	389	24.2	n/a
1-25	1-25	Ozaukee	Port W	11	22	32	SW	E2K		1200	72,000	1.65	0.22	0.055	Trench	n/a			20"	0.7	1,556	97.0	n/a
1-26	1-26	Ozaukee	Port W	11	22	32	SE	PEM		200	12,000	0.28	0.04	0.009	Trench	n/a	not on WWI[7]		20"	0.7	259	16.2	n/a
	2-9	Ozaukee	Port W	11	22	32	SE	Scrub/ Shrub		500	30,000	0.69	0.09	0.023	Trench	n/a	not on WWI[7]		20"	0.7	648	40.4	n/a
	2-10	Ozaukee	Port W	11	22	32	NE	E2K	Sauk Creek	150	9,000	0.21	0.03	0.007	Trench	n/a	T-line		20"	0.7	194	12.1	22.2

		Const. Area Acres	Trench Area Acres	Pipe Fill Area Acres	Forested Wetland Acres Cleared	Vol. Excavated Yd³	Vol. Filled/ Removed Yd³	Vol. Rip Rap/Bank Protection Yd³
calc from option 1 sheet	Route Option 1 Total	10.0	2.1	0.5	5.3			
calc from option 2 sheet	Route Option 2 Total	14.4	1.9	0.6	2.4	27,579	2,292	244

[1] Wetland X-ings numbered as labeled on attached wetland inventory maps (USGS/MWI). Waterway x-ings for the two route options are listed.
[2] Town -Separate Applications being made for Waushgton County, Ozaukee County(Cedarburg), and Ozaukee County(Port Washington & Grafton)
[3] Approximate Waterway X-ing Length from Wetland inventory data
[4] Area of Temporary Disturbance for Construction – Width of the construction right-of-way(ROW) Limited to 60 feet or less
[5] Forested Wetland Acres – Area of wooded wetlands cleared for construction ROW based on WWI wetland type(T3, T3K etc.)
[6] Wetlands not on WWI were identified from additional sources including SEWRPC and Washington & Ozaukee County wetland inventories.

*Vol. Excavated Yd³ = Approx. 8 X 6 foot trench excavations. Information provided for Ch. 30 checklist item A.7.a (vol. of material excavated)
*Vol. Filled/Removed Yd³ = Volume of pipe placed in wetlands/soils displaced. Ch. 30 checklist information item A.7.a (vol. of material material removed and brought in)
*Stream Xing/Bank Protection Yd³ = Estimate approx. 15 feet X 10 feet x 2 feet per stream bank. Individual streambanks may not necessarily require any rock or protection other than revegetation. Information for item 5.of ch. 30 checklist (vol. of rip rap or other bank protection)

*Items included for WRZ Chapter 30 checklist

Forested lands

The construction of gas pipelines through forest lands would result in a temporary and permanent alteration to the forest community along the construction ROW. Pipeline construction requires the removal of vegetation from construction work spaces. In forested areas, this includes removal of trees and shrubs. The area in the immediate vicinity of the pipeline would be kept clear of new trees and shrubs in the future to allow for the inspection of the installed pipeline. On other portions of the construction work area, trees and shrubs would be allowed to regrow; but the return of the area to its preconstruction state would take many years. Conversion of the permanent ROW from woodland to a low-growing, herbaceous plant community, would be a long-term result of construction. Many of the small forest blocks that would be affected by construction of the proposed gas pipeline, however, already have been bisected by the existing electric transmission lines. A portion of the proposed gas pipeline ROW would overlap with the existing electric line ROW, which is already maintained in a non-woody state. Construction of the proposed natural gas line would require clearing of about 8.3 acres of forest if the gas line were built along Route 1 and about 10.6 acres of forest if built along Route 2.

The amount of forest land that would be directly affected on various segment combinations for the gas pipeline between nodes A and E is shown in Table 13 (see also Figure 8). Between nodes A and E, Route 1 would affect 3.1 acres of forest and Route 2 would affect 6.6 acres of forest. The segment combinations that follow Route 2 eastward from node A, then cross over on segment C-C1 or D-D1 to follow Route 1, would affect 3.9 and 3.6 acres of forest, respectively. The segment combinations that follow Route 1 eastward from node A, then cross over on segment C-C1 or D-D1 to follow Route 2, would affect 7.0 and 7.3 acres of forest, respectively.

Historic properties

The area that would be disturbed by construction of the WGC gas line has been reviewed to identify any historic properties that potentially could be affected by the proposed project. Historic properties include archeological sites, historically significant buildings and other resources of historic value. No known historic properties would be directly affected by proposed routes for the WGC gas line.

Aesthetics and visual resources

The new WGC gas line would be underground. The ROW for the gas line and the clearing of vegetation necessary for construction could modify the visual landscape in some areas. The western end of the gas line would pass through an area that is primarily agriculture, while the eastern end passes through an area that is a combination of residential and commercial development. The potential aesthetic impacts from ROW vegetation clearing are expected to be limited, as the gas line routes do not pass through the middle of any forested land and a substantial portion of the gas line routes follow the cleared ROWs of existing electric transmission lines.

General Construction Effects

Air quality impacts during construction of the WGC gas line are expected to be minimal. These impacts would be short-term and local. Fugitive dust may result from exposed soil during construction. Dust generated by vehicular traffic related to the gas line construction could be a

problem for localized areas during dry conditions. Exhaust from construction equipment and trucks may affect air quality, but the impacts should be minimal and short-term.

The construction of the WGC gas line could also create a short-term potential for soil erosion and increased runoff. This potential impact, however, can be minimized by use of standard erosion control measures. The gas lines would require DNR construction site storm water permits, which would establish construction requirements to minimize soil erosion and runoff.

The construction of the WGC gas line could also create a nuisance disturbance. Noise and vibrations generated from construction equipment could be bothersome to nearby residences. These would be short-term and would end when construction is complete.

X. Transmission System Modifications Related to the Power Plant

Existing Electric Transmission System

Figure 10 shows the existing Port Washington Substation and the transmission lines connected to it. ATC owns and operates these transmission facilities. ATC proposes to connect the new combined-cycle combustion turbine generating plant to the substation. Five 138 kV circuits are currently used to transmit power from the Port Washington Substation to the Saukville Substation (Ozaukee County) and to the Range Line Substation (Milwaukee County). ATC proposes to rebuild these circuits and use them to deliver power from the new power plant.

An existing single-circuit overhead 138 kV transmission line (KK762) and a double-circuit overhead 138 kV transmission line (circuits KK742 and KK752) connect the Port Washington Substation to the Saukville Substation. The 4.8-mile, double-circuit line is installed on lattice towers, with circuit KK742 located on the north side of the towers and circuit KK752 on the south side. The 4.7-mile, single-circuit line (KK762) uses H-frame structures. Both lines are located within Ozaukee County. Another existing double-circuit, 138 kV overhead transmission line (circuits KK751 and KK761) connects the Port Washington Substation to the Range Line Substation (Milwaukee County). This 21.2-mile, double-circuit 138 kV line is installed on lattice towers, with circuit KK751 on the west side and circuit KK761 on the east side of the towers.

Figure 10 Transmission Lines Connecting to the Port Washington Substation

Expected Impacts on the Transmission System

Generation interconnection study

ATC conducts interconnection and transmission service studies in the order they are received. An interconnection study is conducted to determine how the interconnection of a new power plant would affect the existing transmission system. This study also determines feasible alternatives for the interconnecting of a new power plant. A transmission service study determines what upgrades and additions to the system would be necessary to deliver power from a new power plant to customers in designated locations.

ATC conducted an interconnection study under Interconnection Request # 002 (IC 002) for connecting the proposed Port Washington Generating Station (PWGS) to the existing transmission system. These studies are summarized in the application and are posted on the ATC website at http://www.atcllc.com/.

ATC performed the following three analyses:

1. **Thermal Analysis**: A thermal analysis of a transmission system identifies elements of the system that may reach their thermal limits when a new source of power operates at its full capacity. A system element that surpasses its thermal limit may melt or catch fire. The thermal analysis also determines feasible solutions to these potential thermal overloads, which may include adding or upgrading transmission facilities. Since the potential locations of loads that a new power plant may serve are not generally identified at the time of this study, the system upgrades identified by the thermal analysis are only optional (potential) upgrades. In other words, they are not required for an interconnection. When the customer for the power is identified, explicit additions to the transmission system are identified for contract sales to be issued.

2. **Stability Analysis:** A power system includes transmission lines, transformers, power plants, and electricity-consuming equipment such as motors and air conditioners. The system behaves like a mechanical spring, swinging in a rhythm. Its operation is "stable" if the rhythm is maintained. Stable operation of the system is affected by the addition of new generation. A stability analysis determines the ability of a power system to recover from line faults, load disturbances, and loss of generation. It identifies potential unstable operations and their mitigation, which may include adding new transmission lines, modifying the interconnection of new generation and its mode of operation, and installing faster-operating circuit breakers.

3. **Fault Duty (Short Circuit) Analysis**: A fault or short circuit occurs when two or more conductors (current carrying wires) with a difference of potential between them contact each other, or any of them touches ground. Short circuits can cause abnormal flows of currents and voltages on a transmission system. These abnormal flows can damage the system if the faulted equipment is not promptly disconnected. The addition of new generation affects fault currents.

Stability and fault analyses require only technical information and a location for new generation. Therefore, any additions or upgrades identified by these studies are considered required system upgrades for connecting new generation to the transmission system.

The initial interconnection request IC 002 assumed the net addition of 1,000 MW of generation at the PWGS. The thermal analysis was conducted for adding this new capacity and retiring the existing 320 MW Port Washington Power Plant. Subsequently, another interconnection request (IC 027) for an additional 200 MW of capacity at the PWGS was made with the ATC. This request increases the net generation addition at the PWGS from 1,000 MW to 1,200 MW. The thermal analysis for the addition of 1,200 MW identified several system upgrades needed for interconnecting the PWGS. These are listed in the application. This thermal analysis identified potential thermal constraints that may occur on the transmission system if the PWGS operates at the specified capacity of 1,200 MW. They are not required for interconnecting the PWGS, but are necessary to sell power to specific customers..

For the stability and the fault duty analyses, IC 027 assumed the addition of 1,200 MW of new generation and the retirement of the existing 320 MW Port Washington Power Plant. The stability analyses in IC 027 identified upgrades, which include replacing the existing two circuit breakers for the Port Washington 138 kV bus and four circuit breakers for 138 kV circuits KK751, KK752, KK761, and KK762. These upgrades are necessary to connect the PWGS to the transmission system. The fault duty analysis did not identify any additional changes.

Proposed Transmission Facilities

ATC identified the following upgrades as Phase 1 transmission improvements. Phase 1 facilities include upgrades required to support the second PWGS 600 MW unit that would begin operation in 2008. ATC recommends completing Phase 1 improvements prior to 2005 and requests authority to proceed with construction. Phase 1 transmission upgrades are detailed below:

> Rebuild the double-circuit 138 kV overhead transmission line (circuits KK742 and KK752) from Port Washington Substation to the Saukville Substation. The double-circuit 4.8-mile line currently uses lattice towers. It would be rebuilt on the existing ROW using larger 1033.5 kcmil ACSR conductors in place of the present 300 AWG copper conductors. The lattice tower structures would be replaced with direct-embedded, double-circuit steel poles near the existing structure locations.
>
> Rebuild the single-circuit 138 kV overhead transmission line (circuit KK762) from Port Washington Substation to the Saukville Substation. The existing single-circuit overhead transmission line is 4.7 miles long and uses H-frame structures. It would be rebuilt on the existing ROW using larger 1033.5 kcmil ACSR conductors in place of the present 300 AWG copper conductors. The H-frame structures would be replaced with stronger H-frame structures near the existing structure locations.
>
> Rebuild the double-circuit 138 kV overhead transmission line (circuits KK751 and KK761) from Port Washington Substation to the Range Line Substation. The existing double-circuit, 138 kV overhead transmission line on lattice towers is 21.2 mile long. The existing 477 ACSR conductors would be replaced with 795 kcmil ACSR conductors,

and the lattice tower structures would be replaced with direct-embedded, double-circuit steel poles.

Replace seven 138 kV circuit breakers and disconnect switches at the Port Washington Substation. Replacement of the four line position circuit breakers (except for line KK742) and two bus section circuit breakers (six in total) was indicated in the stability analysis. The four line position circuit breakers were also required to have two-cycle interrupting capability for meeting the stability criteria. High-speed protective relaying for the four line position breakers must also be installed to meet stability criteria. The KK742 line position circuit breaker would also be replaced so as to be compatible with the new ratings of the other breakers.

Make miscellaneous improvements, including: (a) reinforcing the dead-end structures at Port Washington, Saukville, and Range Line Substations; (b) installing new protective relaying at Port Washington, Saukville, and Range Line Substations; and (c) replacing minor thermal limiters at Port Washington, Saukville, and Range Line Substations.

Cost

The estimated cost for the proposed transmission facilities is $22,250,000. Upgrades and estimated costs are in Table 14.

Table 14 Estimated costs for proposed transmission facilities

Transmission Line and Substation Upgrades	Cost Estimate
Rebuild Saukville to Port Washington 138 kV lines (2005)	$ 4,696,000
Rebuild Port Washington to Range Line 138 kV line (2004)	$11,244,000
Port Washington Substation (2005)	$ 2,558,000
Saukville Substation (2005)	$ 236,000
Range Line Substation (2005)	$ 237,000
Project Licensing (2002)	$ 200,000
Allowance for Funds Used During Construction	$ 233,000
Removal	
Transmission Line Removal	
Saukville to Port Washington (2005)	$ 758,000
Port Washington to Range Line (2004)	$ 1,853,000
Substation Removal	
Port Washington Substation (2005)	$ 59,000
Saukville Substation (2005)	$ 3,500
Range Line Substation (2005)	$ 3,500
Substation Upgrade	
Port Washington Substation (2005)	$ 82,000
Saukville Substation (2005)	$ 30,000
Range Line Substation (2005)	$ 57,000
Total	$22,250,000

Contractual agreements

W.E. Power would own the Port Washington Generating Station. It would pay for interconnection equipment (the connection between the generator circuit breaker and the ATC 138 kV substation bus) and would then turn it over to ATC upon commercial operation and initiation of transmission service for energy from the new power plant. It would also pay for the cost of the required interconnection system upgrades. ATC would compensate W.E. Power for its actual reasonable costs plus interest for the interconnection system upgrades upon commercial operation of the power plant.

ATC would install and own the transmission system upgrades required to provide the transmission service requested by W.E. Power. Wisconsin Electric Power Company and ATC entered into an interconnection agreement for the Port Washington Power Plant "Power The Future" project on December 14, 2001. This agreement was filed with the Federal Energy Regulatory Commission (FERC) for approval.

Construction Schedule

Construction of Phase 1 transmission facilities is planned to begin in October 2003 and to be completed by May 2005.

Substation Location and Route Descriptions

The Port Washington Substation is located on the site of the Port Washington Power Plant, just west of the building housing the power plant. For the proposed project, the fenced area of the substation may need to be expanded slightly to accommodate one of the generator step-up transformers. If the alternative site layout is used (the orientation of the plant is changed), it would be necessary to completely rebuild the substation on a new location on the power plant site.

The off-site proposed electric transmission facilities are located in eastern Ozaukee and northern Milwaukee counties. Minor equipment work (inside the station fence) is required at the existing Range Line and Saukville Substations located at the ends of the affected transmission lines.

Figure 11 shows the routes of the transmission lines that would be rebuilt. The existing double-circuit, 138 kV Port Washington-Range Line overhead transmission line runs south from the Port Washington Substation, through the city of Port Washington, town of Port Washington, village of Thiensville, village of Grafton, town of Grafton, and the city of Mequon (all in Ozaukee County), and the village of Brown Deer, city of Milwaukee, and city of Glendale (all in Milwaukee County), to the Range Line Substation (city of Glendale, Milwaukee County).

This double-circuit line would be rebuilt on the existing ROW using larger conductors. The ROW width is, for the most part, 100 feet. The route involves both fee-owned ROW of WE Energies, for which ATC has easement rights, and ATC easements on private property. The existing lattice tower structures would be replaced with direct-embedded, double-circuit steel poles. All new facilities would be installed within existing easements.

The existing 4.8-mile, double-circuit 138 kV Port Washington-Saukville transmission line and the existing 4.7-mile, single-circuit 138 kV Port Washington-Saukville transmission line would be rebuilt within their current ROWs. The double-circuit line is located in a 130-foot wide ROW as it heads west from the Port Washington Substation. The single-circuit line, on H-frame structures, is located in a 90-foot wide ROW as it heads west from the Port Washington Substation. These lines share a 194- to 220-foot ROW at their western end, as they enter the Saukville Substation. The lines run through the city and town of Port Washington, and the village and town of Saukville in Ozaukee County.

The double-circuit lattice tower structures would be replaced with direct-embedded, double-circuit steel poles near the existing structure locations. The H-frame structures would be replaced with stronger H-frame structures near the existing structure locations.

For both the Port Washington-Range Line and the Port Washington-Saukville lines, the lattice towers would be removed after the conductors and shield wires are transferred to the new poles. Existing H-frame structures on the Port Washington to Saukville line would be pulled from the ground. Foundations would be removed to six inches below grade in non-cultivated areas and 24 inches below grade in cultivated areas. All foundations would be backfilled with native soil. New dead-end poles and some angle poles may be installed in the same location as the existing lattice towers to maintain the alignment of the line within the existing easement. Temporary wood poles may need to be installed within existing ROW to facilitate installation of the new steel poles, and these would be removed upon completion of construction.

Phase 2 electric transmission facilities associated with the PWGS project lie within Milwaukee County, in the cities of Glendale and Milwaukee. The existing underground portion of the 138 kV Sidney Terminal-Cornell transmission line, about two miles in length, would be dug up and replaced with new, higher-capacity underground cable. This line is located in fee-owned Wisconsin Electric ROW. Because this improvement to the transmission system is not needed until the second combined-cycle unit is operating at Port Washington, ATC is not seeking authorization for the Sidney Terminal-Cornell project at this time.

Figure 11 Routes of electric transmission lines that are to be rebuilt

Route Land Use

Land use along the routes is predominantly residential or agricultural. Residences along the Port Washington-Range Line line are most concentrated at the southern end of the line in Glendale and Milwaukee. About 502 residences are located within 300 feet of the Port Washington-Range Line transmission line centerline. Of these, 83 are within 100 feet of the centerline. Between Thiensville and the Range Line Substation, the transmission line lies adjacent to a railroad corridor. For part of its length in Thiensville, Mequon, and Brown Deer, bicycle trails are located within the ROW. Along the Port Washington-Saukville line, the highest concentrations of residences are located in and near the city of Port Washington and the village of Saukville. About 399 residences are located within 300 feet of the Port Washington-Saukville transmission line centerline. Of these, 57 are within 100 feet of the centerline.

For part of its length in the city of Port Washington, a bicycle trail is located within the ROW of one of the Port Washington-Saukville lines. Along the Port Washington to Range Line ROW, a bicycle trail is present in the Mequon and Thiensville areas. Between Thiensville and the Range Line Substation, the transmission lines lie adjacent to a railroad corridor.

Construction Impacts

Wetlands and river crossings

The lines to be rebuilt cross numerous wetlands and streams. Work in wetlands can cause damage to the wetland structure and subsurface water flow, and introduce invasive species, such as purple loosestrife (*Lythrum salicaria)*. The probability of these impacts occurring could be reduced through such measures as performing construction at times when wetlands are dry or frozen; using alternative, off-ROW routes to access construction sites; using low ground-pressure construction equipment; using timber mats; and thorough cleaning of construction equipment to remove invasive plant seeds and stems prior to entering wetlands.

Purple loosestrife, an invasive, non-native weed, may be introduced to a wetland by seeds or plant parts carried by construction equipment that has been used in an infested area. Once introduced to a wetland, purple loosestrife spreads rapidly, crowding out native vegetation. Purple loosestrife has little value for wildlife in providing food or cover.

The largest stream crossed by the lines is the Milwaukee River. The river is crossed, in different locations, by each of the lines. The Port Washington-Range Line line crosses the river east of Cedarburg and north of Pioneer Road, in the town of Grafton. The Port Washington-Saukville lines cross the river just east of CTH O, at the Saukville city/village border.

The Port Washington-Range Line line crosses an additional seven perennial streams and nine intermittent streams. These streams include Pigeon Creek (three crossings) and three tributaries of the Milwaukee River. Just west of the Milwaukee River, the line also crosses 760 feet of a lake. The Port Washington-Saukville lines also cross four intermittent tributaries of Sauk Creek.

Many of the wetlands along the transmission ROWs are small, isolated, or of poor quality. Emergent wetlands are usually dominated by reed canary grass (*Phalaris arundinacea*), but tussock sedge (*Carex stricta*) or common cattail (*Typhus latifolia*) are often locally abundant in

large stands or smaller patches. Scrub/shrub wetlands are also common, bordering streams, as isolated wetlands, or associated with emergent wetlands in the larger wetlands. Common shrubs include red-osier dogwood (*Cornus stolonitera*), numerous willows (*Salix spp.*), tartarian honeysuckle (*Lonicera tartarica*), common buckthorn (*Rhamnus cathartica*), green alder (*Alnus rugosa*), winterberry (*Ilex verticillata*), eastern black currant (*Ribes americanum*), and maple-leaf viburnum (*Viburnum acerifolia*).

The most significant wetlands are crossed by the Port Washington-Range Line line in Ozaukee County. These wetlands are discussed below:

- One of the highest quality wetlands is located east of STH 32, in the town of Grafton. The wetland is mostly a scrub/shrub wetland with mucky soils that is inundated with water, and has fairly diverse vegetation. The Southeastern Wisconsin Regional Planning Commission (SEWRPC) has designated this wetland an isolated natural area. The proposed rebuild crosses 900 feet of this wetland.

- An emergent wetland designated an isolated natural area by SEWRPC is crossed north of Ridgewood Road in the town of Grafton. The crossing distance is approximately 450 feet.

- A third wetland that is part of a SEWRPC-designated isolated natural area is crossed north of Terminal Road in the town of Grafton. This wetland contains open water vegetated by a thicket of red-osier dogwood. Little else grows in the wetland. The crossing of this scrub/shrub wetland is approximately 220 feet.

- Another emergent wetland within a SEWRPC-designated isolated natural area is crossed just south of Falls Road, in the town of Grafton. Approximately 700 feet of this wetland are located within the transmission ROW.

- At the Milwaukee River crossing south of the village of Grafton, the line crosses a complex of uplands, backwater drainages, and wetlands associated with the river. About 550 feet of wetlands are crossed within a 1,100-foot stretch of floodplain.

- Two wetlands are located within a SEWRPC primary environmental corridor between Highland Drive and Bonniwell Road, southeast of Cedarburg. One wetland is approximately 350 feet wide and is virtually a reed canary grass monoculture. The other wetland is an emergent wetland, through which a 10-foot wide perennial creek flows. This wetland, with a width of approximately 220 feet, is dominated by reed canary grass, but other species include common horsetail (*Equisetum arvense*), common cat-tail, shrubby willows, and bulbiferous water-hemlock (*Cicuta bulbifera*).

- Another SEWRPC primary environmental corridor is encountered at a crossing of Pigeon Creek within an emergent/scrub-shrub wetland. At this crossing, Pigeon Creek is approximately 35 feet wide, while the wetlands along the creek are 525 feet wide. Most (460 feet) of the wetlands are scrub/shrub, dominated by red-osier dogwood, common

buckthorn, willow, and ash (*Fraxinus sp.*). Approximately 65 feet of the wetland crossing is herbaceous, dominated by reed canary grass.

- The transmission line crosses approximately 590 feet of wetlands (470 feet of emergent and 120 feet of shrubby wetlands) north of County Line Road, in the city of Mequon. The emergent part of the wetland is dominated by reed canary-grass, while the scrub/shrub portion is vegetated with red maple (*Acer rubrum*), common buckthorn, aspen (*Populus sp.*), and reed canary grass.

ATC plans to locate replacement transmission line structures along the existing centerline, adjacent to the existing structures, in an effort to avoid negotiating new easements. During the final engineering design, ATC would look at those structures that are currently located in wetlands to evaluate whether the replacement structure could be moved to a non-wetland location. Depending on the specific situation, it may not be feasible to relocate all of the structures out of wetlands. It appears that several of the existing angle structures are located in wetlands and relocating these may not be possible while maintaining the existing route centerline.

Measures to mitigate impacts to specific wetland locations would be determined based on site conditions at the time of construction. These measures may include one or more of the following:

- Final Design—If feasible, replacement structures would be located in upland areas.

- Construction Timing—Wetlands would be less susceptible to damage if work is done when they are dry or frozen.

- Low Ground-Pressure Equipment—Use of low ground-pressure construction equipment, such as tracked equipment that spreads weight over a larger surface area, would reduce the potential for wetland damage due to disturbance of vegetation, soil compaction, or soil mixing.

- Construction Mats—Use of timber construction mats can minimize rutting and disturbance of vegetation or soils.

- Alternative Access—Where alternative access routes (e.g. existing field access lanes) allow access to a transmission structure location along a route that would avoid or minimize the crossing of wetlands as compared to access following the ROW. ATC would work with the property owners to gain permission to use these routes.

To help avoid spreading purple loosestrife, construction machinery should be cleaned before beginning work on a project and after working in infested wetland areas. Because it is possible that cleaning may miss some plant seeds or parts, post-construction inspection of wetlands in the ROW is essential to locate any new infestations. Inspections in the years immediately following construction would make possible the early identification and removal of new infestations, when it is most easily accomplished. It would be necessary to continue these inspections and removals

for several years to assure the eradication of any infestations resulting from construction. The DNR can provide guidance in the identification and removal of purple loosestrife.

Threatened and endangered species

Information concerning the presence of threatened or endangered species in the project areas near the transmission line routes and substation sites was obtained through review of the Wisconsin Natural Heritage Inventory (NHI) database. Information contained in the NHI identified several plant and animal species within areas located within two-miles of the affected transmission line routes. The majority of the land along the existing transmission line ROWs is being used as cropland. Several areas, consisting of forested or shrubby areas that were sometimes associated with a drainage or wetland, have been set aside by landowners. During May 2001, a habitat assessment was conducted by ATC's consultant to determine if appropriate habitat existed for threatened and endangered plant and animal species within the affected transmission line ROWs.

Habitat within the transmission line ROW is significantly disturbed as the linear corridor traverses light industrial, residential, cropland, pasture, and regularly maintained upland and wetland areas. Due to the disturbed nature of the existing corridor and the specific habitat and growth requirements of the rare plant and animal species listed for the area, the habitat within the transmission line upgrade corridors is generally unsuitable for these species. However, two plant species, slender sedge (*Carex gracilescens*) and Indian cucumber-root (*Medeola virginiana*), both state species of special concern known to occur in Milwaukee County, were found within or at the edge of the transmission line ROW. The sedge was observed under shrubs lining a portion of the rails-to-trails system in Milwaukee County. Indian cucumber-root was located in shrubby habitat adjacent to a SEWRPC isolated natural area in Ozaukee County. No other rare, threatened, or endangered species were observed within the transmission line ROW that would be disturbed by the rebuilds.

There is the potential that additional rare plants may occur in the existing ROW where suitable habitat is present. Construction during the winter would minimize the potential impact to rare plants. Conducting rare plant surveys in suitable habitat would determine whether impacts are likely.

Butler's garter snake (*Thamnophis butleri*), a state threatened species, may occur in the vicinity of the proposed rebuild projects. This species prefers wet-mesic prairies, marshes and adjacent grassy and vacant areas and is likely to occur in the project corridor. Impacts to this species can be avoided by restricting construction during times of the year when the snake is active. If this is not possible, an Incidental Take Authorization would be needed from the WDNR before the project could proceed. The Bureau of Endangered Resources would coordinate with ATC this process and appropriate measures to minimize impacts to the snake.

The proposed transmission line upgrades are not likely to impact any state or federally protected species, species of concern, or potential habitats because very little ground disturbance is expected during the upgrades. The two state species of special concern, found within or at the edge of the transmission line ROW, can tolerate some disturbance and the plants have been

subject to periodic transmission maintenance activities. Hence, the minimal impacts expected during the proposed transmission line upgrades should not adversely affect these species.

The ground disturbance associated with the electric transmission line construction can introduce invasive plant species into areas of native vegetation. Several of the wetlands crossed by the transmission lines may be vulnerable to the introduction of invasive plants.

No additional wooded areas outside of the existing ROW would need to be cleared for the upgrades or equipment staging areas. All necessary equipment would use wetland crossing techniques allowed by the DNR Chapter 30 permit (such as construction mats and use of tracked vehicles) and would not enter or drive across any streams and rivers. Some woody vegetation and shrub/brush clearing may be required within the existing ROW to perform the upgrades, but these activities are not significantly different from regular ROW maintenance activities. The activities associated with the proposed upgrades are short-term and any areas disturbed within the existing transmission line ROW would quickly revert to existing conditions.

Agriculture

A total of 48,230 feet of cropland are crossed by the lines to be rebuilt. Another 7,285 feet of pasture are crossed. Primary crops raised in the area include corn, oats, soybeans, alfalfa, and other row crops. The potential agricultural impacts that could result from the project include land removed from production due to the specific placement of relocated transmission line structures, soil compaction, and impacts to efficient tillage due to line placement. Relocated transmission line structures could create areas that are difficult or impossible to cultivate, or affect drain tiles and surface drains. Replacing lattice tower structures with single-pole structures would reduce the amount of untillable land around the base of each structure.

Construction work in farm fields can compact soils and damage crops and drainage tile. Soil compaction reduces crop yields and may take years to be reversed through natural processes. It is likely that drainage tile is located on some of the farm lands. ATC has stated that if it is made aware of the presence of drainage tile, it would try to avoid impacting it. If drainage tile are damaged, ATC states that it would repair them.

Measures to mitigate agricultural impacts on specific farm parcels would be determined based on site conditions at the time of construction. These measures may include one or more of the following:

- Construction Timing—Working when farmland soils are likely to be frozen would reduce the potential for soil compaction. Avoiding work on farmland soils when they are saturated would also lessen soil compaction potential. Construction during fallow periods would avoid direct crop damages.

- Low Ground-Pressure Equipment—Use of low ground-pressure construction equipment, such as tracked equipment that spreads weight over a larger surface area, would reduce the potential for soil compaction or soil mixing.

- Alternative Access—Where alternative access routes (e.g. existing field lanes) allow access to a transmission structure and reduce the amount of cultivated lands crossed (compared to accessing the location along the ROW), ATC would work with the property owners to gain permission to use these routes.

- Compaction Reversal—Chisel plowing, or other deep soil aeration methods following construction could help restore compacted soils.

- Compensation—ATC would compensate property owners for crop damage and loss of production.

Historical and archeological impacts

The proposed transmission work would not impact any historic buildings or structures. Along the length of the transmission line rebuilds, there are several known archeological sites, including burial sites and Native American village sites. The Wisconsin Historical Society is recommending that a qualified archeologist monitor construction work adjacent to one archeological site to ensure that any previously unidentified burial sites are not disturbed during construction.. Because federal permits are required for the project, the federal requirements of Section 106 of the National Historic Preservation Act may require a pre-construction archeological field survey of all areas to be disturbed by the project.

Recreational impacts

About 4.5 miles of recreational trail in Thiensville, Mequon, and Brown Deer lie within the ROW of the Port Washington-Range Line line. Another half mile of trail is located in the ROW of one of the Port Washington-Saukville lines in the city of Port Washington. These trails are used for biking, walking, and cross-country skiing. It may be necessary to temporarily close portions of these trails during line construction. Signs would be posted notifying the public of these closures. Any damage to the trails caused by construction would be repaired by ATC.

Operational Impacts

Aesthetic impacts

Replacement of the existing lattice tower structures with new single-pole double-circuit structures would likely reduce the overall visual impact of the existing Port Washington-Saukville and Port Washington-Range Line lines. The remaining Port Washington-Saukville line, which is on H-frame structures, would be rebuilt using H-frame structures, so the change in visual impact would not be as great. All the line rebuilds would involve replacing the existing conductor cables with heavier cables to increase the capacity of the lines. These heavier cables, because they are thicker, would make the lines appear slightly more obvious.

Some ground cover, shrubs, and low-growing trees would be removed in the existing transmission line ROWs to permit access along the ROW and at structure locations. This vegetation would be allowed to reestablish itself once construction is completed. Because the ROWs would not need to be expanded, no additional trees would be removed. The existing

ROWs are currently being maintained free of any tall-growing trees that could interfere with the lines.

Work required for the project at the existing substations would not result in an appreciable change to the visual setting of these substations.

Magnetic fields

The rebuild of the Port Washington-Range Line line and the addition to the system of the proposed Port Washington combined-cycle power plant would result in a doubling of the magnetic field levels at the transmission line centerline. Further away from the centerline, however, field strengths would decrease more rapidly due to improved field cancellation on the new line. Addition of the second Port Washington combined-cycle unit would not appreciably change magnetic field levels from the calculated values expected after the construction of the first unit.

Magnetic field strengths at normal loads (80 percent of estimated peak, system in normal configuration) are calculated to change from about 45 milliGauss (mG) at the centerline to 84 mG. At the edge of the transmission line ROW (50 feet from the centerline), fields that currently range from 13 to 22 mG would be 16 mG. At 300 feet from the centerline, fields would change from 0.4-0.9 mG to 0.2 mG.

For the Port Washington-Saukville lines, magnetic fields produced by the rebuilt transmission lines would increase three- to five-fold from present levels once the new units of the Port Washington Generating Station are operating. Field strengths are higher near the line on H-frame structures, due to less effective field cancellation, as compared to lines on double-circuit structures. Once again, addition of the second Port Washington combined-cycle unit would not appreciably change magnetic field levels from what they are calculated to be after the construction of the first unit.
Magnetic field strengths at normal loads are calculated to change from a range of 9 to 46 mG at the ROW centerline to a range of 49 to 254 mG. At the edge of the transmission line ROW (45 to 130 feet from the centerline), fields would change from a range of 4 to20 mG to a range of 15 to 108 mG. At 300 feet from the centerline, fields would change from a range of 0.09 to 0.58 mG to a range of 0.30 to 2.8 mG.

XI. Contacts

The Public Service Commission (PSC) and the DNR held two public information meetings in Port Washington on May 22, 2002 to explain the proposed project and receive comments. Comments received at these meetings dealt with concerns about aesthetic impacts from the power plant project, magnetic field levels on the connecting electric transmission lines, and neighborhood impacts from construction activities.

- Mark Grams, Port Washington City Administrator – provided information on city permitting requirements and financial impacts

- Tom Meaux, Ozaukee County Administrative Coordinator – provided information on the County budget

Two public hearings were held in Port Washington on October 1, 2002 to receive comments. The comments are part of the PSC record for the project.

XII. Summary

Wis. Admin. Code § PSC 4.20(2)(d) identifies ten broad factors, which are useful to consider when evaluating whether an Environmental Impact Statement is warranted for a given Commission action. The following subsections will discuss each of the ten factors with respect to this case.

Effects on geographically important or scarce resources, such as historic or cultural resources, scenic or recreational resources, prime farmland, threatened or endangered species and ecologically important areas

f proper precautions are taken, construction of the proposed power plant, electric lines, and natural gas pipeline should not affect archeological sites or rare plant and animal species, including Hine's emerald dragonfly, Butler's garter snake, and peregrine falcon. Proper construction techniques and transmission structure siting would minimize impacts to wetlands and streams.

Conflicts with federal, state, or local plans or policies

The proposed project does not strictly adhere to the state energy priorities of Wis. Stat. § 1.12(4) because the new power plant burns natural gas to meet the energy needs of WE customers instead of relying on conservation and renewable resources.

With respect to the state energy priorities listed in Wis. Stat. § 1.12(4), the PWGS better meets the priorities than the existing power plant that burns coal. Reusing the existing plant site rather than developing a new greenfield site supports the state policy of promoting the use of "brownfields." The power plant site is zoned for industrial use by the city of Port Washington. The construction parking and laydown area is zoned as public and utility land. The city's land use plan designates this same area for future industrial use.

Retirement of the coal dock and wastewater treatment dock would make these areas available for public use, in accordance with the public use doctrine for lakebed in the state. However, the proposed additional fill in the lakebed to construct the porous dike and the potential closing off of 10 to 12 acres of lake near the Port Washington harbor could adversely affect the public's use of the lake.

Construction of the gas pipeline would not result in any known conflicts with federal, state, or local plans or policies.

Significant controversy associated with the proposed action

There is no known controversy regarding the type, magnitude, or significance of the expected environmental impacts related to the proposed gas pipeline, electric transmission improvements, or the power plant.

The PWGS is one component of the Power the Future proposal. The financing and ownership structure of the proposal is different than all previously reviewed power plant projects and is a matter of great contention among interested parties to the case. However, considered on their own merits, these financial and ownership issues do not have significant environmental ramifications.

Irreversible environmental effects

Few aspects of the proposed project would be truly irreversible, although reversing project actions may be costly. Fuel consumed in construction and used to fuel the plant would be irreversibly committed and unavailable for other uses. The filling of a small wetland to create the new plant access road would destroy this resource.

Impacts to wetlands from construction of the gas pipeline may not be reversible.

New environmental effects

The porous dike is intended to exclude fish from the water intake, but it would also exclude boaters and would result in the filling in of a portion of the lakebed. The closing of the coal and wastewater treatment docks would provide an opportunity for new public use areas and access to the lakeshore. The new construction road would become a city street once construction is completed. Occasional flooding of the tributary to Sauk Creek would be prevented by the new overflow bypass channel.

Construction of the gas pipeline would not result in any new type or form of environmental effects. The construction of the proposed gas pipeline is a common activity of natural gas utilities.

Unavoidable environmental effects

Short-term noise, traffic, and visual impacts during construction would be unavoidable. Changes in the appearance of the plant and the plant site due to the conversion to natural gas would be necessary.

The construction of the gas pipeline and rebuilding of the electric transmission lines would result in short-term, localized increases in noise, vibrations, air quality degradation, odors, and erosion and run-off, all of which are expected to be minor.

The precedent-setting nature of the proposed action

The precedent-setting nature of the project would derive from its being the first lease that would be approved under a new state statute allowing lease generation contracts between utility and non-utility affiliates. The repowering of a coal-fired power plant to run on natural gas has already occurred in Wisconsin. The construction of gas laterals and the rebuilding of transmission lines are relatively common.

The cumulative effect of the proposed action when combined with other actions and the cumulative effect of repeated actions of the type proposed

Repowering of coal-fired plants with natural gas leads to greater dependence on natural gas to meet energy needs. However, such replacements contribute to greater generation efficiency and reductions in emissions of acid rain precursors, greenhouse gases, and mercury.
Cumulative impacts of repeated projects involving the enclosing of lakebed within a 10 to 12-acre diked area would result in the loss of public waters.

The cumulative effect of similar actions could lead to greater difficulty in market entry for renewable energy projects and the need to construct a more extensive natural gas transmission and distribution pipeline system in Wisconsin.

The proposed construction of the gas pipeline is a common activity of natural gas utilities. Commission staff have reviewed many similar projects. The experience of the staff review of multiple similar projects is that: 1) as many of the projects of this type are constructed in already disturbed and extensively maintained road ROWs or through heavily-modified agricultural lands, the potential environmental effects are generally minor; and 2) significant environmental effects that do occur are usually the result of unusual resources being present along the route of a particular project. The overall cumulative effect of repeated actions of the type proposed is, therefore, considered minor, but every project is screened for the presence of unusual resources or circumstances.

The foreclosure of future options

The proposed project would effectively foreclose the continued use of the Port Washington site for coal-fired generation. Also, rebuilding the power plant would prevent, for the time being, the total redevelopment of the site for non-industrial purposes.
Commission staff is not aware of any options for future natural gas system reinforcement or expansion that would be either foreclosed by the proposed project or necessary if the project were put in place.

Direct and indirect environmental effects

No major direct or indirect environmental effects are expected related to construction and maintenance of the power plant, the electric transmission facilities, or the natural gas pipeline.

The direct effects of the proposed project would include changes to the visual environment and air quality. Fish mortality due to the cooling water intake would be expected to decrease when the existing intake is modified. The new overflow bypass channel would reduce onsite flooding. The number of employees operating the plant would decrease. Agricultural land would be temporarily disrupted by the rebuilding of the electric transmission lines.

The direct environmental effects of the proposed gas pipeline include short-term, localized effects from construction activities that would cease when construction is complete. Construction of the gas pipeline would also affect small areas of wetlands and wooded areas. Agricultural land would be temporarily disrupted by construction of the gas pipeline.

The indirect effects of the project may be less obvious. They could include the following:

Because the new plant would be roughly twice as efficient as a coal-fired plant, overall emissions of greenhouse gases could be reduced through the retirement of existing coal-fired generation. This, combined with other world-wide efficiency efforts, could help reduce the severity of global warming.

The extra generating capacity afforded by the repowering of the Port Washington Power Plant would make power curtailments less likely at times of peak electric demand. This would help avoid the shutdown of industrial machinery during power shortages, reducing industrial production disruptions.

By adding electrical generation to the eastern Wisconsin region, additional new transmission system improvements and their associated impacts might be avoided or delayed.

By adding a large consumer of natural gas, the project may accelerate the expansion of interstate pipeline facilities bringing natural gas to Wisconsin.
Magnetic field levels along the rebuilt transmission lines would change. At normal loads (80 percent of system peak), magnetic fields along the Port Washington-Saukville lines would increase to two to five times over the existing levels. Levels along the Port Washington-Range Line line would be lower than existing levels beyond the limits of the ROW.

Invasive species could be introduced to wetlands and woodlands along the routes of the rebuilt transmission lines and gas lateral as a result of construction activities.

The project could result in new public access to lakefront areas.
Shared revenues resulting from the new plant could allow the city and county to make improvements in municipal infrastructure and programs, or allow a reduction in taxes.

XIII. Conclusions

Air emissions would change at the Port Washington site as a result of the proposed project. NO_X, SO_2, mercury, sulfuric acid, fluoride, and lead emissions would all decrease. The decrease in NO_X and SO_2 would be dramatic. Emissions of CO, particulates, and VOC would increase.

Because of required VOC offsets, regional emissions of VOC would decrease. Reductions in SO_2, sulfuric acid, and NO_X emissions would decrease the amount of acid rain that could be attributed to the plant. These changes would occur while electric generation is roughly tripled at the site. For the categories of emissions for which there would be an increase, air quality would decline, but not enough to violate standards.

Natural gas service in the Port Washington area would be improved. Power supplies in eastern Wisconsin would be improved, lessening the strain on the existing electrical transmission system by reducing the need for power imports.

Shared revenue payments to the city of Port Washington and Ozaukee County would increase as a result of the project. These revenues are an important source of income for the city. Payments to the county would be relatively less important as a share of its budget.

Construction of the natural gas pipeline impacts small areas of wetlands and forest.

Temporary impacts to agriculture would occur. Natural gas pipeline construction would disrupt crop production during construction. Transmission line rebuilds could damage crops if construction traffic crosses cropland during the growing season. Cropland on WE-owned land south of the power plant would be out of production for the duration of construction work.

Fish mortality from plant operation would decrease from existing levels because of a reduction in impingement and entrainment that would be required by new water intake rules. Construction work for the gas pipeline installation and the transmission line rebuilds could potentially impact the Butler's garter snake where the routes cross suitable habitat. Construction techniques and mitigation methods that have been used for other similar construction projects to protect the Butler's garter snake would be used for the proposed gas pipeline and transmission line rebuilds when habitat for the snake is crossed.

The new power plant could use cooling water at a rate 25 percent greater than the existing plant. Nevertheless, environmental impacts on Lake Michigan due to cooling water discharge are not expected to change significantly. Elimination of the coal pile would be a significant improvement that would eliminate a pollutant source that contributed coal dust and dissolved metals to the runoff and wastewater discharge.

Visual impacts resulting from the project would be obvious at the power plant site. Exhaust stacks would be reduced to less than half their current height but there would be twice as many. The existing coal pile would be removed and coal boats would no longer enter the harbor. The existing building would be enlarged to be taller and bigger and would enclose more of the power plant equipment, although the north and west walls would be retained. The north face of the bluff south of the plant would be cut back and regraded. Construction activity would be evident at the site for over five years. Replacement of existing lattice tower transmission structures with single-pole structures would also create a visual impact.

The project would result in new public access to lakefront areas. Retirement of the coal and wastewater treatment docks make these lakefront areas available for public use. Access to the lakeshore south of the power plant would also be provided.

Noise would increase on a temporary basis (during construction) but would be reduced over the long term due to the elimination of coal boat traffic and coal handling.

Traffic would increase near the power plant during construction. Once construction is completed, traffic levels would decrease to less than is associated with the current plant, due to the reduced number of employees needed to operate the power plant.

The PWGS would be constructed on the site of the existing Port Washington Power Plant. Because the proposed natural gas-fueled plant would replace the existing coal-fired plant, most long-term impacts would be reduced, especially as compared to building the proposed plant on a new, undeveloped site. Most impacts during construction are expected to be relatively short in duration.

The DNR and PSC have prepared a joint environmental assessment of the PWGS. The environmental assessment was prepared to determine if an environmental impact statement is necessary under Wis. Stats. § 1.11 and ch. NR 150, Wis. Adm. Code. It has been determined that no significant environmental impacts on the human environment are likely to occur as a result of this project. Therefore, an environmental impact statement is not required. Additional assessment may be required if the scope of the project changes.

DECISION (This decision is not final until certified by the appropriate authority)

In accordance with s. 1.11, Stats., and Ch. NR 150, Adm. Code, the Department is authorized and required to determine whether it has complied with s.1.11, Stats., and Ch. NR 150, Wis. Adm. Code.

Complete either A or B below:

A. EIS Process Not Required ☐

The attached analysis of the expected impacts of this proposal is of sufficient scope and detail to conclude that this is not a major action which would significantly affect the quality of the human environment. In my opinion, therefore, an environmental impact statement is not required prior to final action by the Department.

B. Major Action Requiring the Full EIS Process ☐

The proposal is of such magnitude and complexity with such considerable and important impacts on the quality of the human environment that it constitutes a major action significantly affecting the quality of the human environment.

Signature of Evaluators	Date Signed
Victor Pappas, DNR SER Sheboygan Water Basin Team Leader	October 31, 2002
Raj Vakharia, DNR AM/7 Air Management Engineer	October 31, 2002

Number of responses to news release or other notice:

Certified to be in compliance with WEPA	
Environmental Analysis and Liaison Program Staff	Date Signed

NOTICE OF APPEAL RIGHTS

If you believe that you have a right to challenge this decision, you should know that Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed.

For judicial review of a decision pursuant to sections 227.52 and 227.53, Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review shall name the Department of Natural Resources as the respondent.

To request a contested case hearing pursuant to section 227.42, Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. The filing of a request for a contested case hearing is not a prerequisite for judicial review and does not extend the 30-day period for filing a petition for judicial review.

Note: Not all Department decisions respecting environmental impact, such as those involving solid waste or hazardous waste facilities under sections 144.43 to 144.47 and 144.60 to 144.74, Stats., are subject to the contested case hearing provisions of section 227.42, Stats.

This notice is provided pursuant to section 227.48(2), Stats.